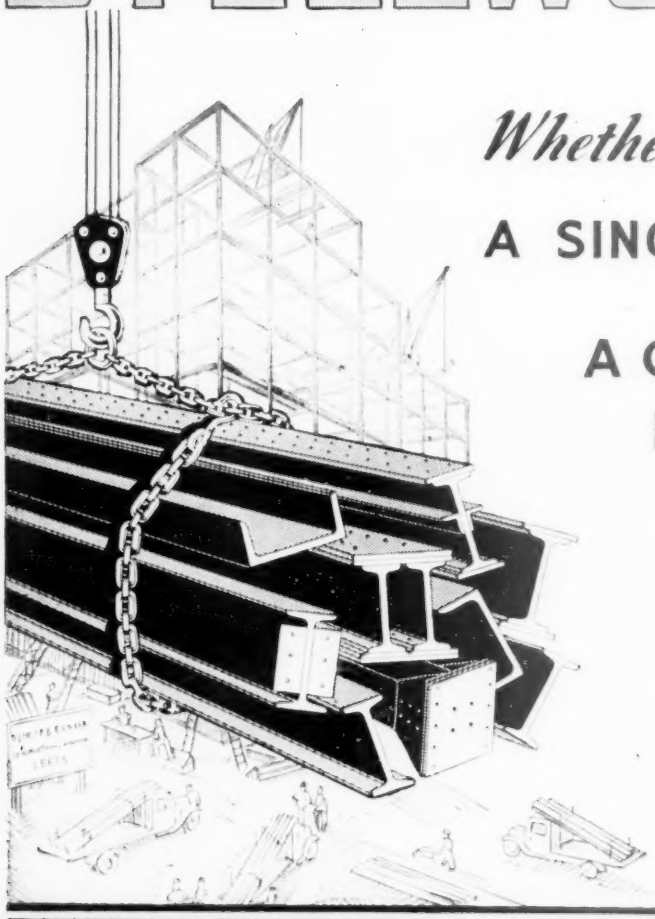
THE ARCHITECT & BUILDING NEWS

IN THIS ISSUE

- ARCHITECTURE IN THE ROYAL ACADEMY—I
- CHISLEHURST AND SIDCUP COUNTY SECONDARY SCHOOL
- CURRENT MEASURED RATES

MAY 8, 1952 · VOL. 201 · NO. 4351 · ONE SHILLING WEEKLY

STEELWORK



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G.E.C. Electric Unit Heaters are easy to install. They operate at low cost, require negligible maintenance, and permit close temperature control.

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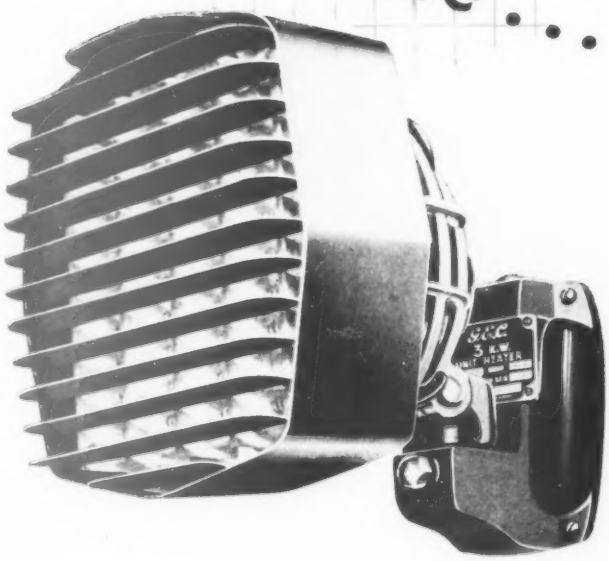

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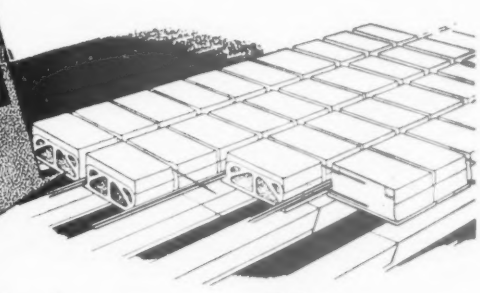

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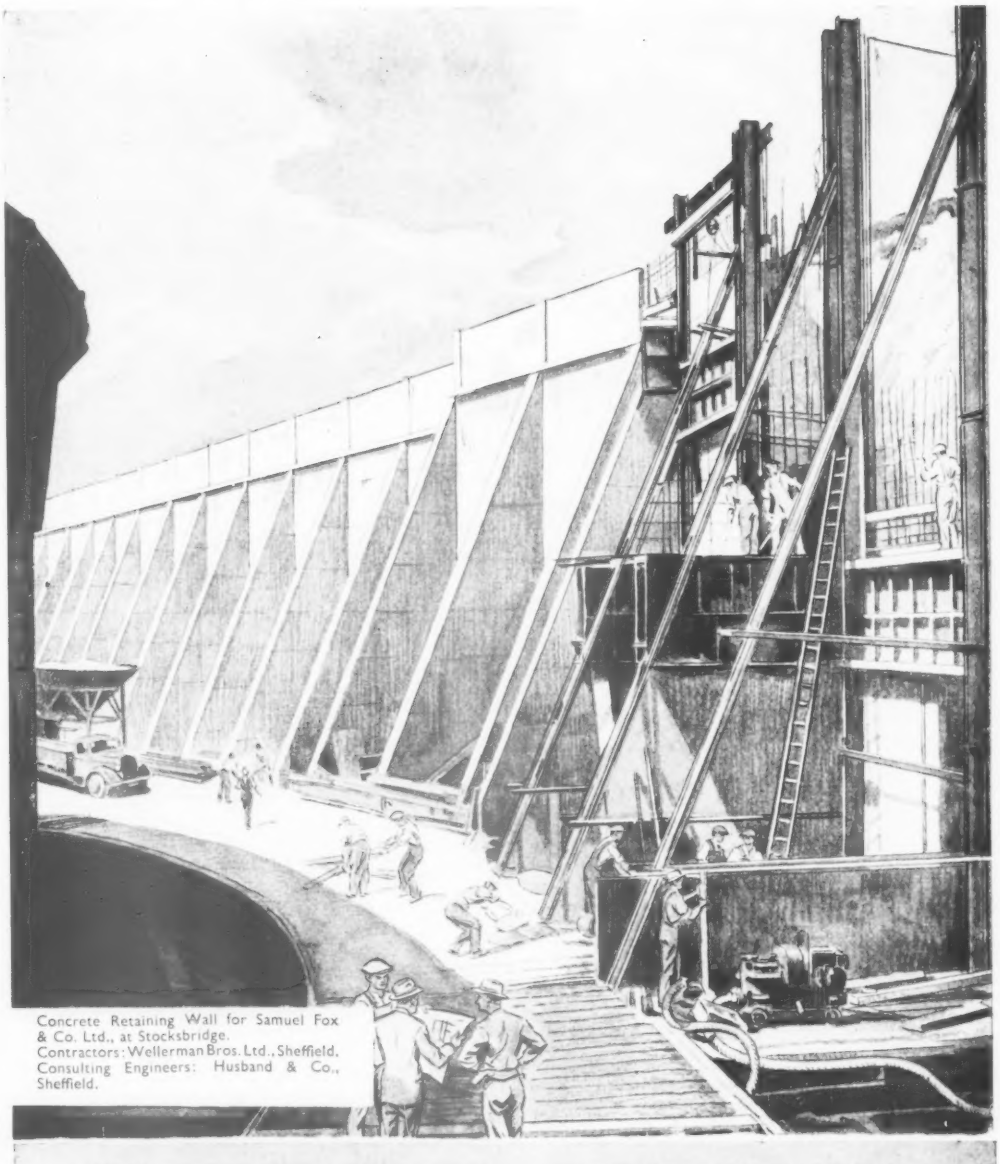

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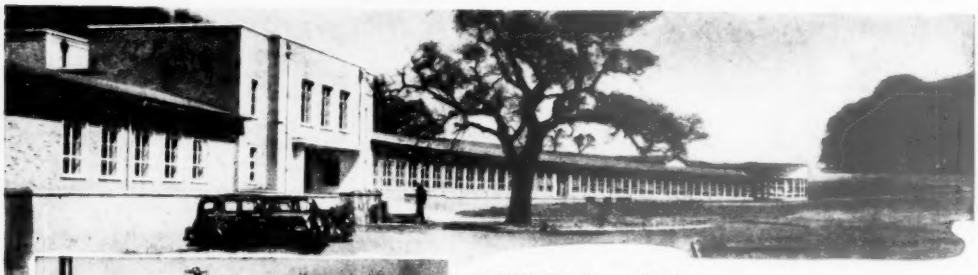

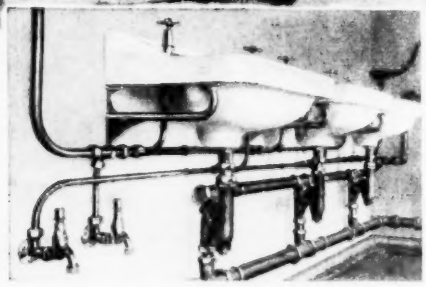

DESIGN FOR EDUCATION

A fine example of modern educational facilities is provided by the Nottingham County Council's Bramcote Hills School, which is equally up-to-date behind its impressive facade. Kontite Compression fittings, the perfect jointings for copper pipe services, were the natural and complementary choice for this fine building.

Photograph of Bramcote Hills School by courtesy of E. W. Roberts, Esq., F.R.I.B.A., County Architect.

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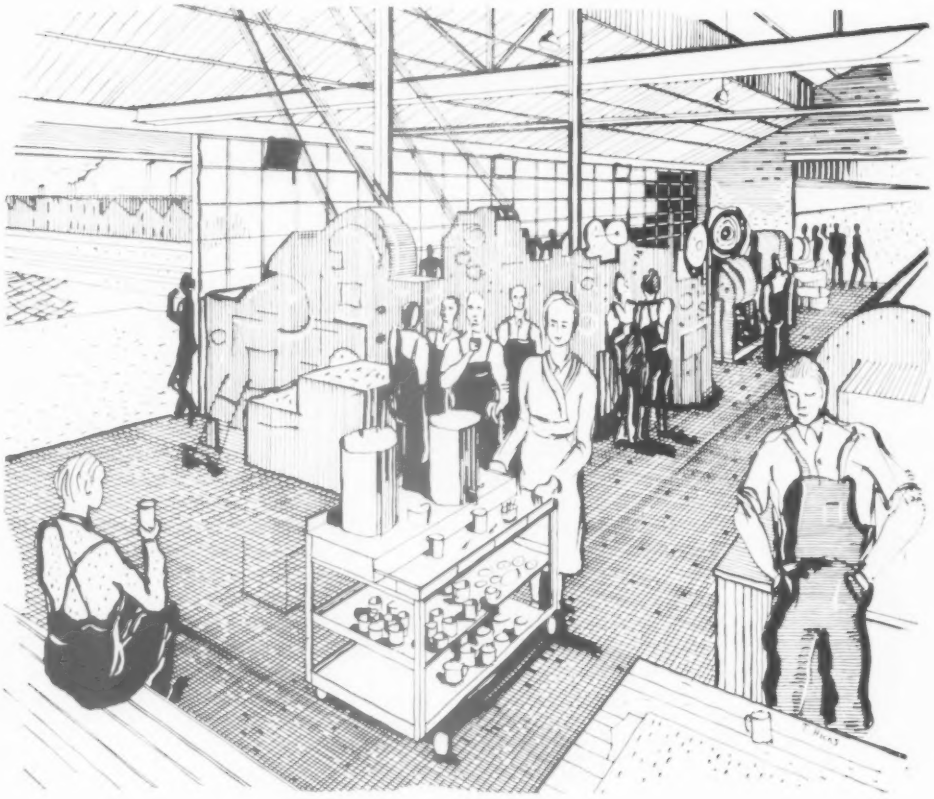

GAS and the Factory tea bar

Before an industrial catering and tea service can be brought into being, someone has to weigh up what special needs have to be catered for, what type of service and accommodation is to be provided, what should be the scope of the menu, and how a smooth flow of operations can be ensured. In addition to providing the source of energy for cooking, water heating and refrigeration, local Gas Undertakings are competent to advise on these and other problems which must be solved if catering is to be efficient. They do so willingly, when consulted, because they believe that is the best way to ensure, in the Nation's interest, that gas is used economically and wisely.

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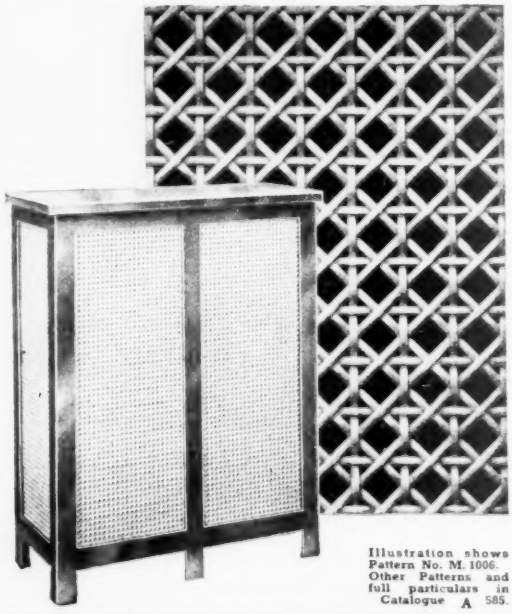

Illustration shows Pattern No. M. 1006. Other Patterns and full particulars in Catalogue A 585.

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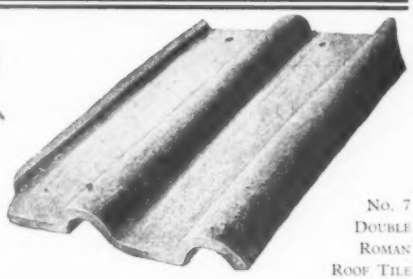

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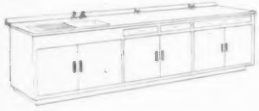

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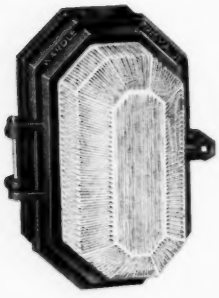

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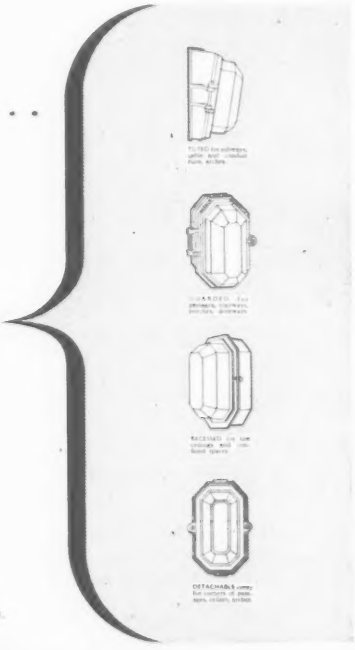
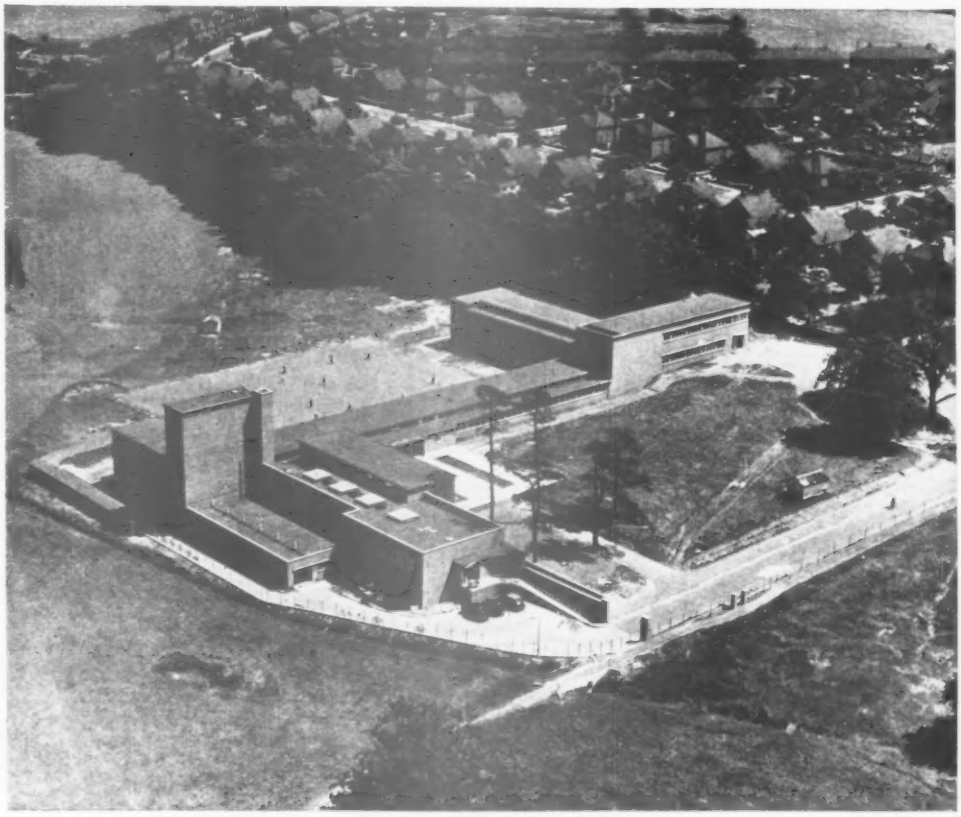


The **Wardle** *Please send for details to* Engineering Co. Ltd., Old Trafford, Manchester, 16.



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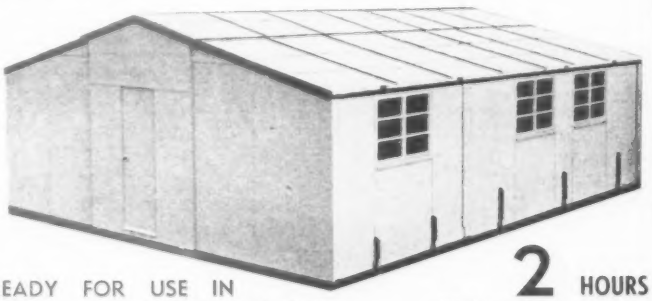

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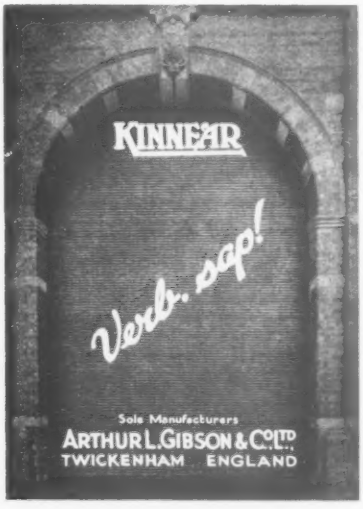
"... We have inspected with the Works Manager of the Auckland harbour board, the Doors supplied by you in 1913, and we have to report that they are generally still in excellent condition. The main wear has been with the Slats individually ... ed by continuous hand usage, and the ...



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Part of the English scene...

The Kentish oast house has become almost as much a symbol of The Marley Tile Company as their official Stonehenge trade mark. The typical English scene portrayed here shows a pair of these famous tiled oast houses, large numbers of which have in recent years, like so many old English farm houses, been retiled by Marley : thus allying their old charm and beauty to the protection which Marley tiles provide. And all kinds of roofs are, of course, covered by the unique Marley guarantee. (See below.)

"Not for an age—but for all time"

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1 Marley tiles will not laminate or decay for 50 years.
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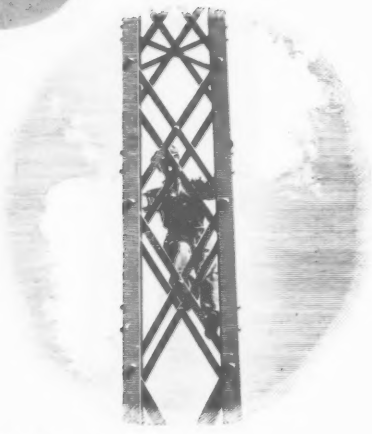
'It's never too young to learn. Even though a few knocks and bumps are suffered in the process, learning the hard way is a good way. Experience is a splendid teacher for both aspiring chairman and structural engineers.



Banister, Walton build in steel

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FOR INDUSTRIAL ESTATES

"TURNALL"
REGD TRADE MARK

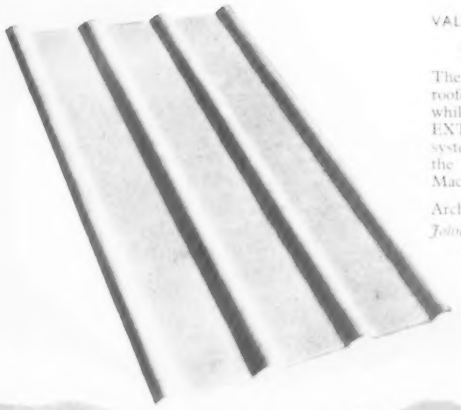
Asbestos-Cement
TRAFFORD TILES

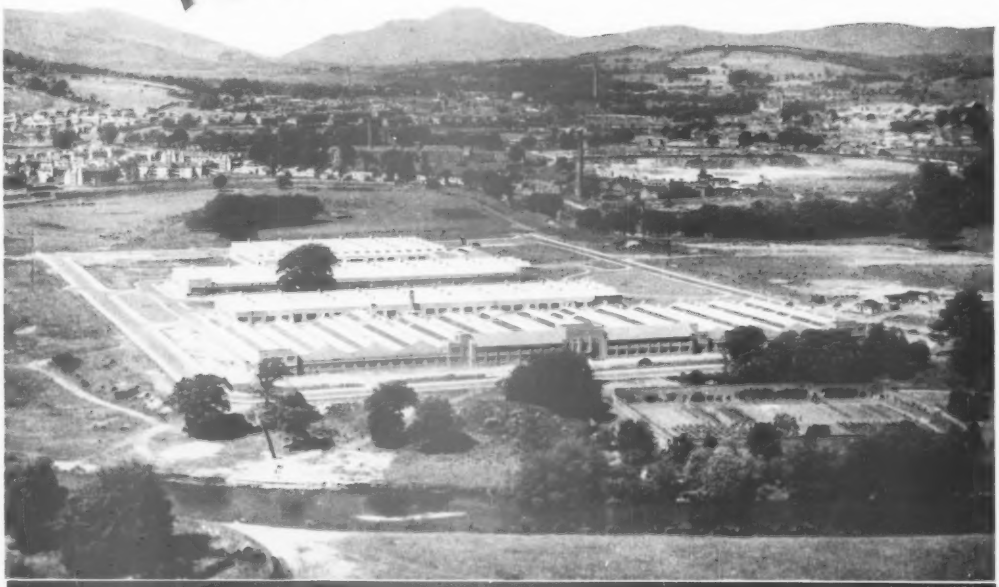
VALE OF LEVEN ESTATE · DUNBARTONSHIRE

One of the Scottish Industrial Estates

The entire group of buildings illustrated is roofed with "TURNALL" TRAFFORD TILES, while over 200 "EVERITE" Asbestos-Cement EXTRACTORS are employed in the ventilating system. The foreground block comprises one of the British Factories of Burroughs Adding Machine Ltd.

Architects —
John Keppie & Henderson & J. L. Gleave P.A.R.I.B.A.





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ASCOT PRODUCE FIRST BALANCED FLUE WATER HEATER

The new Ascot 715 multipoint is the first balanced flue gas water heater to go into production anywhere in the world. Once again Ascot leads the way! Once again Ascot helps the gas industry to maintain the position of gas as the best and most economical fuel for providing an instant, endless supply of hot water!

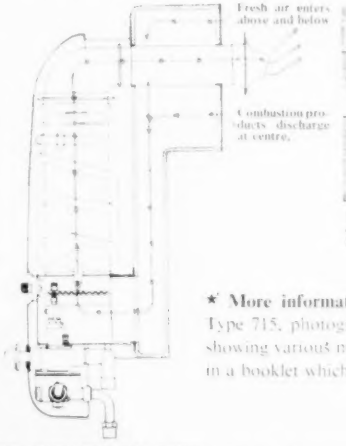
THE NEW ASCOT 715 is fundamentally different from any other water heater. The combustion chamber and flue are sealed off from the room in which the heater is installed. Enclosed ducts draw air to burn the gas from outside the building and carry away all the products of combustion.

A FULL INSTANTANEOUS MULTIPOINT SERVICE *similar to that of the popular Ascot 709 is given by the 715. It also has a stainless steel burner which has proved so successful in resisting corrosion and maintaining a high standard of efficiency.*

Particular advantages of the Ascot 715

1. Combustion chamber and flue sealed from the room. Vitiation of air in the room is absolutely impossible. No down-draughts.
2. Handsome but unobtrusive. Projects only 5 inches. No visible flue.
3. Can be fitted in a cupboard without regard to ventilation.
4. Ideal for multi-storied buildings. Can be installed on any outside wall even though the terminal may be in proximity to overhanging, or other projections.
5. Installation is simple. Full advantage can be taken of service ducts.
6. Smooth contours and hard enamel make cleaning easy. No crevices or dust traps. Particles cannot drop from the heater.

Supplies. As many municipalities have specified the 715 for their housing projects the needs of new buildings must have priority.



The terminal can be fitted even in proximity to overhanging, or other projections. There is no flue pipe or cowl.

★ **More information.** A detailed explanation of the Type 715, photographs, a specification and drawings showing various methods of installation, are contained in a booklet which will be sent on request.

ASCOT

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Vol. 201 No. 4351

THE ARCHITECT & BUILDING NEWS

May 8, 1952

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FACTORIES IN THE MODERN COMMUNITY

SINCE the publication of the Annual Report of the Chief Inspector of Factories (in February last) there has been quite a number of pronouncements on the subject of factory design, amenities and management.

These are all welcome signs that industrial working conditions are, at last, almost freed from the stresses and even evils of the war-time conditions, a period which saw so great an expansion throughout the country and are now finding a new level of efficiency and imaginative enlargement. For example, although there are now fewer factories in the country (last year) than there were in previous years, there are considerably more which are mechanized, while at the same time accidents have not increased to any appreciable extent. This is an index of improved conditions. At the same time it is significant that while there was a large decrease in the number of accidents in heavy industry and in particular in ship-building, there was an increase—the largest in any particular industry—in building. It would appear that some improvement is called for in site organization and in the safety measures taken in building work, which in this case presumably includes civil engineering.

In Scotland last week, speaking at the Scottish Management Conference, Sir Richard Roberts stressed that a new outlook is still required in industrial management. It must, he said, "welcome the employees genuinely as associates and collaborators in our joint industrial enterprise." This is all the more important in the face of short supply in manpower, which calls for better training at all levels, including the managerial.

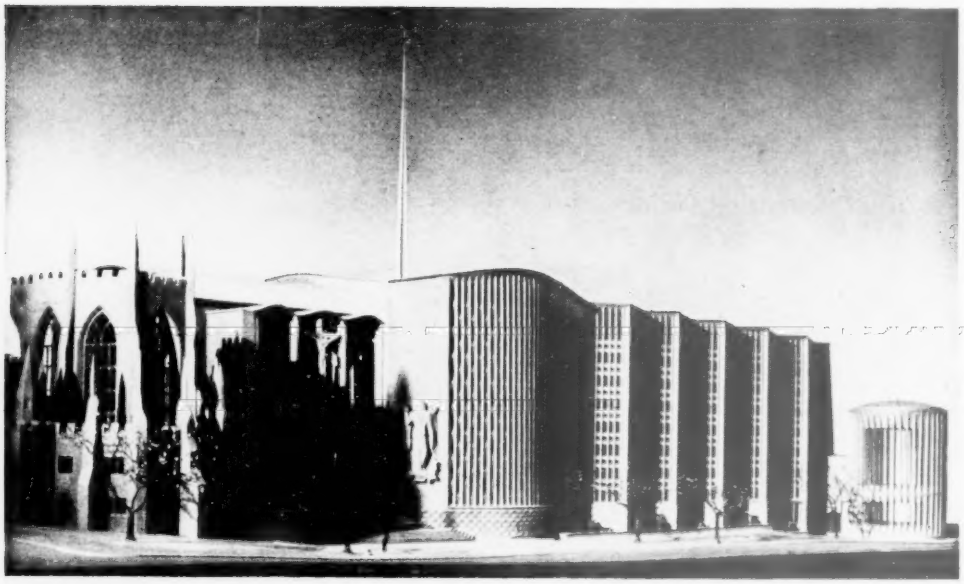
Sir Richard suggested also that it was desirable to abolish much of the "traditional Boardroom 'hush-hush' atmosphere" in order to release knowledge of policies and plans "right through the management line, right down to the rank and file." He made it clear also that he thought we had "not accorded the foreman his proper place" in the organization, "neither in the means of his selection, his training nor his status"; how well could these points be applied to the building industry and how much could they be extended by all within that industry.

Under modern conditions the trade unions could contribute a new outlook towards the conduct and purpose of industry; in making this point Sir Richard said, "it should be recognized that the full value of any human factor can only be fostered in the individual works, factory or mine by the collaboration between man and management in that unit . . . this new technique is not mere sentimentality . . . it is a tribute to intelligence."

Mr. Walter Bennett, during the same week, talked of "Amenities in Factory Design," at the Royal Society of Arts. He made many useful points on planning in general and on the welfare and working units, discussing matters as far apart as acoustics of canteens and the scientific use of colour for all parts of a factory, from the walls to the moving parts of machinery. He also concluded that happier and healthier working conditions would produce better workmanship and increased production and "this is a matter of serious importance to all those concerned with industry."

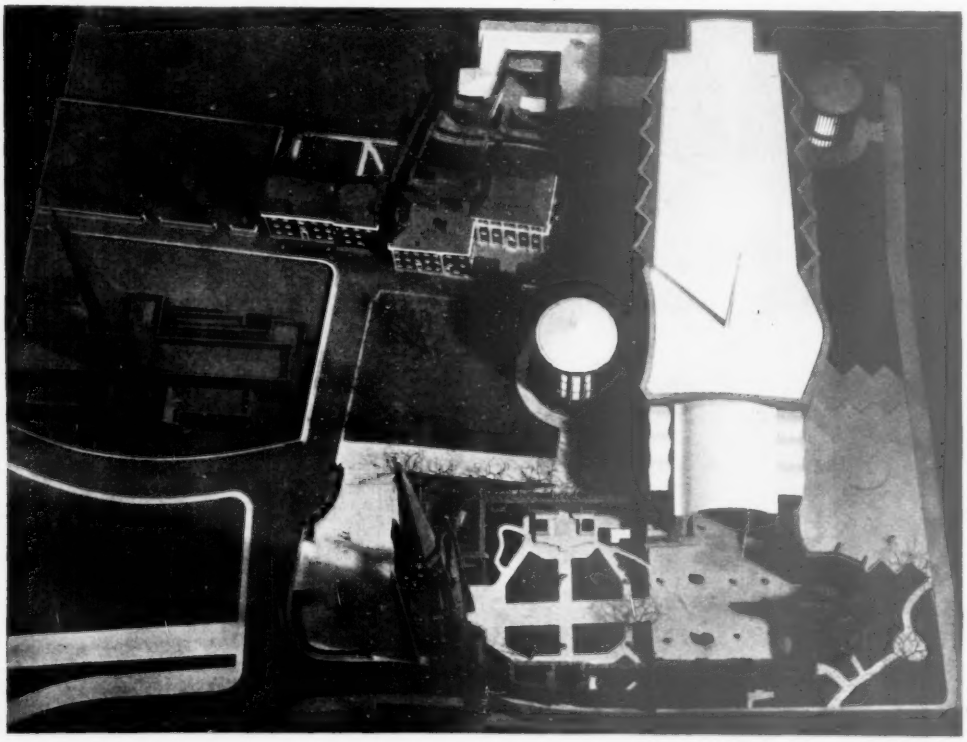
The basic fact that undoubtedly emerges from all this is that only a balanced collaboration of all parties can make industry efficient and safe physically and can produce happiness and satisfaction in work psychologically. The stress is not on political control but on the application of increased intelligence.

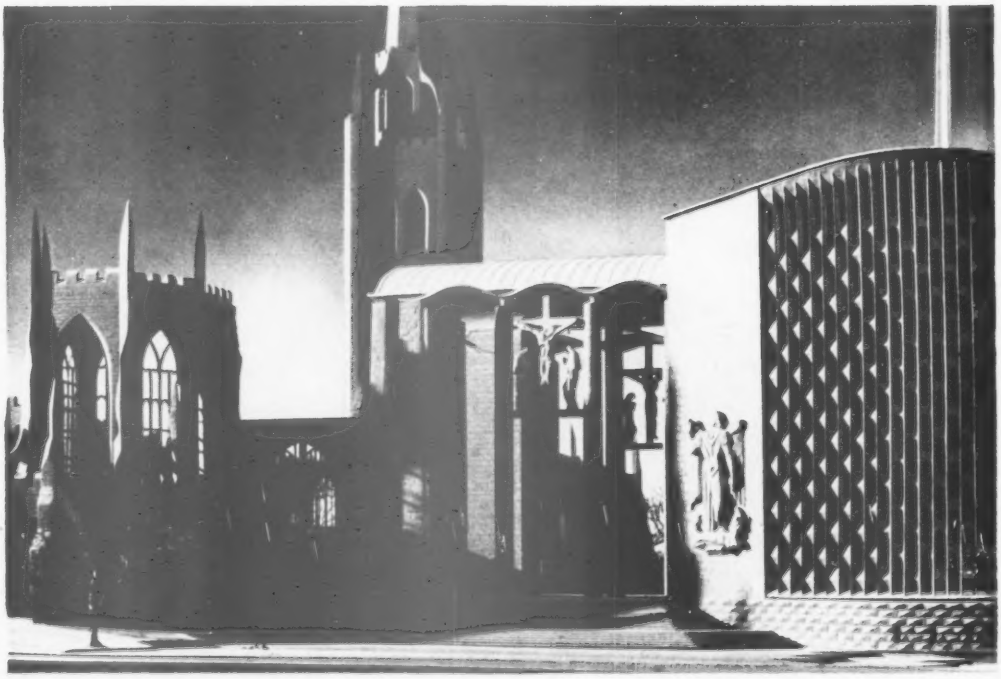
E

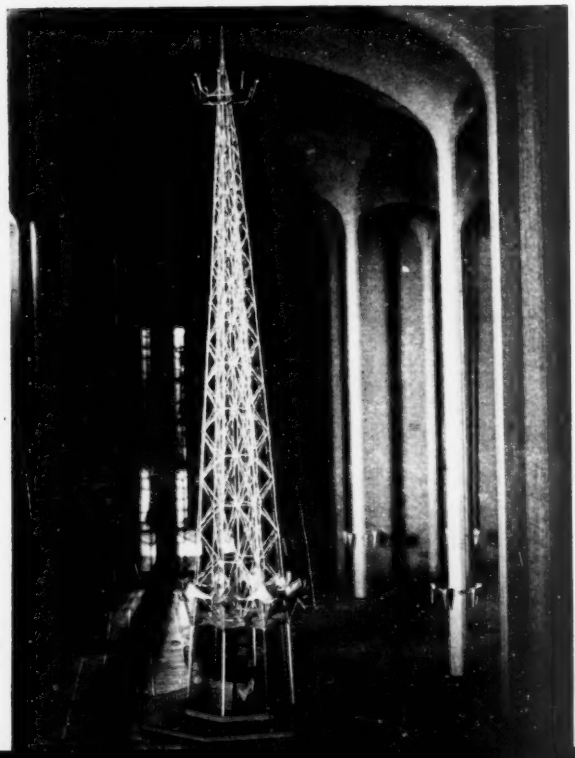


ARCHITECTURE AT THE ROYAL ACADEMY

MODEL OF THE NEW CATHEDRAL CHURCH OF ST. MICHAEL, COVENTRY





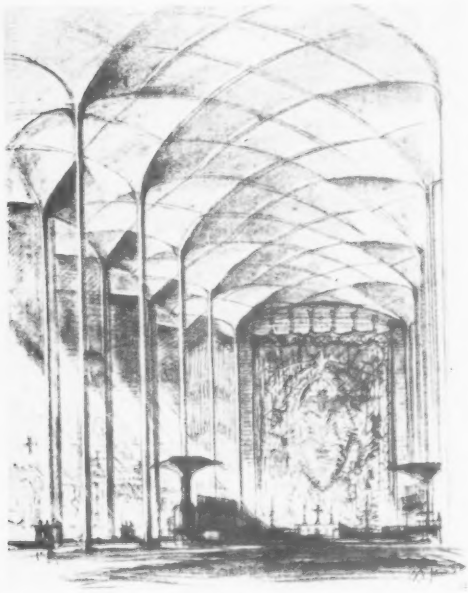


EVENTS AND COMMENTS

THE ACADEMY

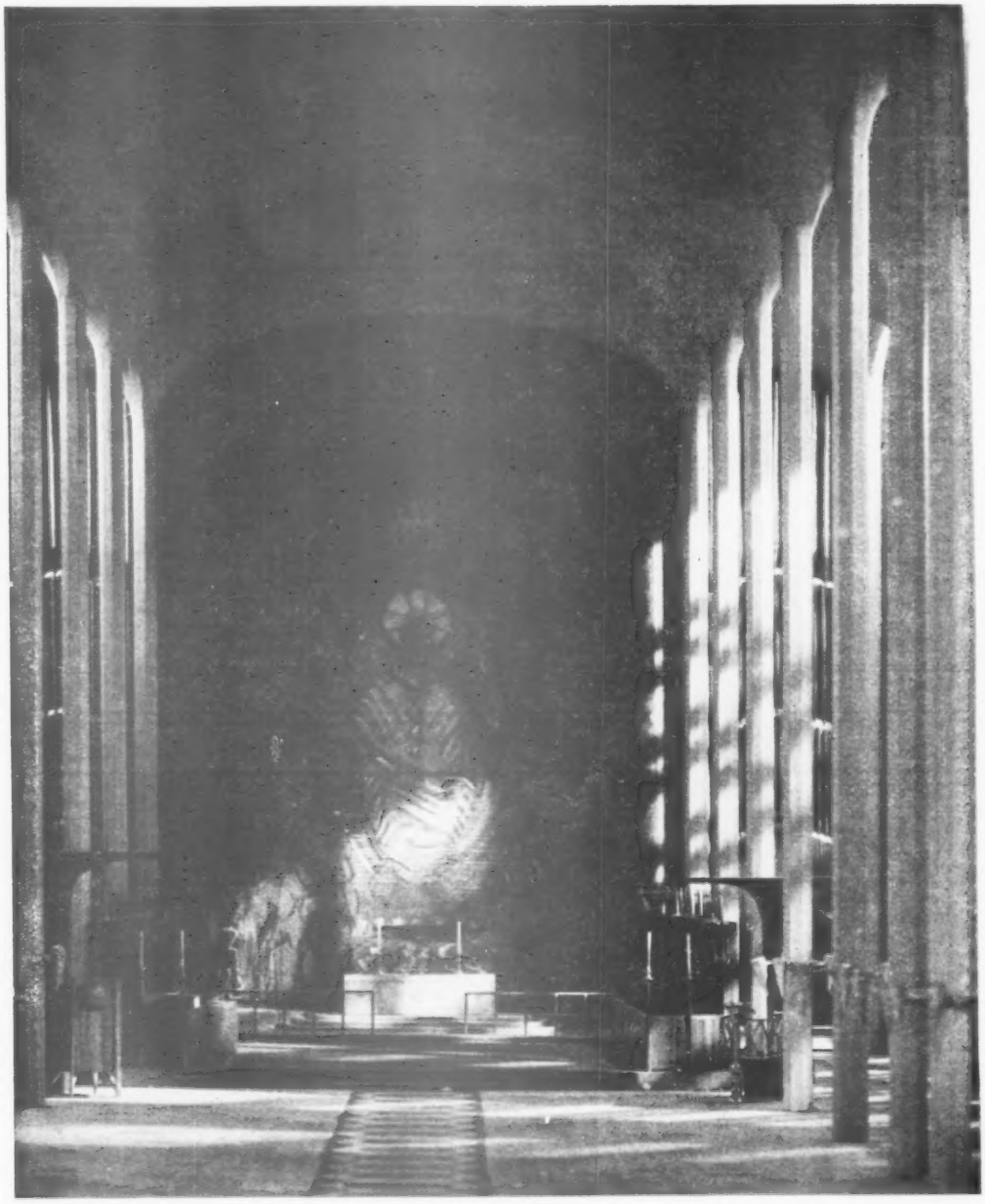
I do not know whether it is because I am getting old that the architecture room seems to be this year somewhat better than usual. It is true that a number of drawings appear to have slipped in, in spite of the selection committee, but that often happens. As a general view I would say that this year the traditionalists have not produced their best work whereas those of the contemporary school whose work is shown have produced more mature work and seem surer of themselves. I do not think that it is to the credit of modern architecture that although one can pick out with ease the work of academicians and other senior gentlemen it is not possible to guess accurately the authors of the contemporary schemes.

Basil Spence's beautiful Coventry model steals the show completely. I am told that the figures in and about the building were made in Spence's office.



The illustrations on these pages are of the model of Coventry Cathedral, architect Basil Spence. The drawing above, by Mr. Spence, shows the latest design for the vaulting.

The model is in several respects out of date in detail. The floor patterns, for example, are to be redesigned. Robert Goodden is to design the church furniture and like the other artists and craftsmen to be engaged will be given a free hand by Spence. The Edinburgh Weavers will make the great tapestry for which Graham Sutherland has been asked to prepare sketches. The model will have a permanent home in the tower of the old cathedral.



The drawings in the architecture room are presented in a wide variety of techniques, from rubbed ink to thick oils by way of pastel and pen and ink. The standard is, on the whole, much better than it was three years ago. Gordon Cullen's crisp pen and wash drawing of Graham Dawbarn's West Indies University makes many of the more elaborate works look very pompous. Professor Holford's pen and ink sketch of Cambridge from the air is most beautifully done. Raymond Erith disappointed me again this year although his subject, "Variation on a theme of Palladio, design for a church in Italy," was well up to standard. A spidery note at the bottom of the drawing says that it must be viewed through a small hole, e.g., a cotton reel at a distance of 33 inches from its right-hand

side at a certain level. Unhappily the Academy had not seen fit to hang the drawing so that this could be done, nor has it provided a small hole through which to look. Monumental architecture is represented by very large drawings of the Bankside power station by Sir Giles Scott, which looks more like a cathedral than quite a number of cathedrals; and the law courts at Southend by Vincent Harris which will provide an alternative sight to the pier. Perhaps one will be able to see the sea at low tide from the top of its tower.

For fear that you should think that I have only recorded my dislikes here are some of the things I liked. Stanley Marsh's scheme for Colchester barracks, Hening and Chitty's officers' housing at Aldershot, Section V of Lawrence Wright's panorama from the stone gallery of St. Paul's, Basil Ward's insurance building in Kendal—though how he managed to get it on the site is a mystery—John Stammers' drawing of Professor Richardson's Restoration of St. Alphege Church, Greenwich, William Howard's scheme of housing for the borough of Lambeth, and Colin Oakes' laboratories at Beeston.

As for the pictures ... Eric Kennington's large First War picture of the Kensingtons at Laventie, painted on glass, has most of my votes and makes many of the other works look pretty weak. There are, as usual, quite a number of paintings which I would be very glad to own, but there is also a great deal of junk. Sir Alfred Munnings has painted a self-styled Problem Picture, the problem being, presumably, to find the problem, for the picture seems clear enough to me. Dame Laura Knight has done something which few people have got away with since Claude. She has painted a setting sun shining directly through a pair of trees. A most courageous act. There are a tremendous number of kippers about this year. My favourite piece of sculpture this year is Tehuana a terra cotta woman carrying a basket on her head, by John Skeaping. I did not really have long enough at the private view to give an authoritative view on British Feminine Beauty 1952. Dress generally was more sombre than usual and I fear that the hat-hungry photographers waiting outside did not get much of a bag. On the whole the academicians, and those wishing to be mistaken for them, in beards and flowered waistcoats, carried the day although I found the feminine trend of wearing a smart black suit with nothing else showing round the neck was sufficiently disturbing to be noted. For the first time since the war I missed the famous twins, but I know they were there for I saw their photograph in the *Sunday Times*.

THE END OF THE FESTIVAL BRIDGE

The final day of the test on the Fry-Drew-Arup bridge on the South Bank site was exceedingly well arranged. The Cement and Concrete Association who organized the tests, with the co-operation of the M.o.W. and L.C.C., had invited the press and a number of other guests. The press had a bar all to themselves and could, if they wished, have watched the tests glass in hand. Lunch was also provided in the Festival Hall. The bridge had been heavily loaded during the previous two days and it only remained for the coup de grace to be given. The final loading was done in increments of three and a half tons and many of us thought that it was going to be a long and tedious business. However, the white-coated workers with, I thought, some disregard for their own safety worked swiftly, and the crane men with an informity of obscure but efficaceous signs lowered the lumps of iron with great despatch. As the cantledge—or should it be piece of cantledge?—bringing the load to 85 tons was lowered on to the sagging deck the end pier fell forward and to the left while the span descended smoothly and quickly to the gantry which had been built beneath it. It was a most dramatic moment and it seemed to me that some of the experts were standing rather too near, for large lumps of pig iron sailed about like cotton reels. The crowd surged round to have a closer look regardless of the danger and it was with difficulty that they were made to return behind the barrier. I was amused by the number of contractors' boards displayed. Kirk and Kirk built the bridge, Richard Costain prepared it for the tests, and Cubitts loaded it with a crane owned by John Mowlem. Ove Arup, large cigar in mouth and camera in hand seemed to be enjoying the scene as much as anyone. I, too, enjoyed the tests but at the same time I thought that it, with the rest of the demolitions going on all round, was a singularly sad way of celebrating what was very nearly the anniversary of the opening of the Festival of Britain.

Variation on a Theme by Palladio: design for a church in Italy by Raymond Erith.

STEINBERG

The I.C.A. Gallery in Dover Street continues to hold exhibitions of first-rate quality. The recent one of photographs by M. Cartier Bresson was one of the finest seen in London, comparable to the Victorian photographs at the V. and A. last year, and now we have the recent work of Saul Steinberg, who was trained in architecture in Milan, and handles all kinds of building with complete confidence in his drawings. His drawings, which are as spontaneous as those of a child, but composed with such care that they are minor works of art, are as funny, but at the same time wickedly satirical as any being done to-day. It is hard to say which series is most telling, the creatures on graph paper; the Hollywood horse-opera groups; the baleful women in fur coats; the French underground stations; the American processions in which the manhole covers are brilliantly noted; or the superb series of bogus

diplomas. They are all wonderful. How lucky Steinberg was not over here last year, he might have turned his attention to the South Bank and Battersea!

COLOUR AND LIGHT IN INDUSTRY

The Minister of Works opened the British Colour Council's exhibition on Friday. This exhibition represents in visual form the various theories and practices discussed during the conference organized some years ago by the C.o.I.D. and the British Colour Council at the R.I.B.A. I could find nothing startlingly new but it was interesting to see a fair number of photographs of factories which had been redecorated in bright colours. I personally am not entirely convinced by some of the theories of suitable colours for different types of work and I think that the real contribution of colour in industry is to brighten up generally the black, dust and oil of the average machine shop. Factory owners should be encouraged to visit this exhibition. It is a pity that it has not been better staged for in an organization such as the British Colour Council one looks for smart presentation and this is anything but smart.

ARCHITECTS GALORE—CORRECTION

The fourth word in the last line of the first column on page 505 should have been Associateship, not Association.

ABNER

NEWS OF THE WEEK

Housing Drive: First Quarter's Figures

The Minister of Housing and Local Government, Mr. Harold Macmillan, opening a new block of flats in Hatfield New Town on Friday, said:—

"I am to-day able to announce the national housing figures for the first quarter of 1952. They are encouraging. First, the houses completed. That is the main thing. That means families going off the housing queues into the houses. In the first three months of 1951 these figures were: 43,891. The first three months of 1952 they are: 53,609. An increase of 9,718 or 22 per cent. That is a splendid result. Let us keep it going. Some people may say this has been done by concentrating all our efforts on this completion job, and that we shall suffer for it later. That is not true. The other figures are just as encouraging. The figures of houses under construction are:—

At the end of the first quarter of 1951: 202,053. At the end of this quarter 231,651. An increase of 29,598 (15 per cent). Next, houses started during the two quarters. In 1951, 44,536 and now, in 1952, 59,577. An increase of 15,041 (34 per cent). In addition, I am authorizing local authorities and private builders to get on with their plans for many more. The order book is full, and will be kept full.

"There is just one other point. I have heard it said that the new policy is to rely mainly on private building for sale. That is not true. In each of these categories there are more houses to let than at the same time last year. More finished to let; more being built to let and more contracted for to let. So anyone who says that we are concentrating on houses to sell is wrong. The figures speak for themselves. In the first quarter of 1951 39,421 houses were built for letting, 4,470 for sale. In 1952 the figures were 47,541 and 6,068.

Leverhulme Scholarship in Architecture, 1952

The Leverhulme Scholarship, tenable at the Architectural Association School of Architecture, London, value £1,000 which includes payment of fees and maintenance for five years, has been awarded this year to Mr. Stuart R. Lewis (Cheltenham Grammar School and Cheltenham College of Art).

Plan for New Unesco H.Q.

A group of five internationally known architects will meet for two weeks at Unesco House, Paris, to examine an architectural plan for the proposed permanent Unesco headquarters building. The architects, who were chosen by Director-General Jaime Torres Bodet of Unesco and the Organization's Headquarters Committee, are Lucio Costa of Brazil, Walter Gropius of the United States, Le Corbusier of France, Sven Markelius of Sweden and Ernesto Rogers of Italy.

They will examine the plan which has been prepared by Eugene Beaudouin, prominent French architect, on the request of the Director-General and the Headquarters Committee, and make a report to Unesco giving their observations and recommendations. In the preparation of the plan, M. Beaudouin had the advice of two other leading architects, Eero Saarinen of the United States and Howard Robertson of the United Kingdom.

The decision to build a permanent Unesco headquarters building was taken at the Organization's Sixth General Conference in Paris in 1951 after the French Government donated a site in the Place Fontenoy behind the Ecole Militaire in Paris.

News Notes

Mr. A. R. F. Anderson, F.R.I.B.A., has been appointed President of The Architectural Association for its 106th Session, commencing on June 1st, 1952.

The Ministry of Works derequisitioned premises occupied for Government purposes at the rate of one a day during the month of March. This represents a total area of 120,000 sq ft. It is the policy of the Ministry to return property to owners or previous occupiers as speedily as possible.

The next meeting of the R.I.B.A. Library Group will take place at 66, Portland Place on May 12th at 6 p.m. The evening will be devoted to the identification of unknown drawings in the R.I.B.A. Library.

Portal Frame Construction for a Church

The Architect for the Congregational Church, Bromley, illustrated on page 463 of the *A. & B.N.* of April 17th was R. Mountford Piggott and Partners. C. W. Glover and Partners designed the concrete trusses.

ROYAL SCOTTISH ACADEMY 1952.—ONE HUNDRED AND TWENTY-SIXTH EXHIBITION

IT is no novelty but distinctive to the Royal Scottish Academy that foreign exhibits are hung among the works of Scottish artists, sculptors and architects. The President of the Academy pointed out that in 1857 the Emperor Napoleon sent pictures for exhibition to the show of that year and it was not long after this that the Academy formed its own company of volunteers to help repel the expected invasion of this country by "Boney."

This year there is in the Architecture Section a specially invited selection of the works of Mr. W. M. Dudok of Hilversum covering his activities from the early 1920's till the present day. Holland has also sent a number of photographs of sculptures in their architectural settings.

Among the Scottish exhibits there are many which cannot be shown to advantage by means of photographs, and others which have been so recently illustrated in our paper that we have chosen for reproduction a few of the lesser known exhibits.

We recommend a visit to the exhibition to see the remainder of some sixty items on the catalogue which include in addition to the interesting Dutch drawings and photographs the following works.

Photographs of some recent sculpture designed by Hew Lorimer and carved by him in collaboration with Maxwell Allan; Basil Spence's design for Coventry Cathedral; modifications to and redecoration of the entrance vestibule of St. Andrew's Parish Church, Edinburgh, by Esme Gordon; and The Royal Mile, Edinburgh Reconstruction and Restoration Scheme—Cannongate Area, by Robert A. Hurd.

British Industries Fair

A report on the Engineering Section of B.I.F. at Castle Bromwich, May 5-May 16, will appear in next week's issue.

Wednesday, May 14, will be celebrated as Commonwealth Trade Day at this year's British Industries Fair at Earls Court and Olympia.

Mr. Peter Thorneycroft, M.P., President of the Board of Trade, will be joined by the Marquess of Salisbury, K.G., Secretary of State for Commonwealth Relations and Mr. Oliver Lyttelton, M.P., Secretary of State for the Colonies, in paying a special visit on that day to the Commonwealth Section which consists of 17 stands taken by Commonwealth Governments.

Subsequently the President will entertain the Lord Mayor and Sheriffs to lunch at Earls Court, in company with the Secretaries of State for Commonwealth Relations and Colonies, and the High Commissioners of the Commonwealth countries.

Mr. Thorneycroft will broadcast in the B.B.C. Home Service after the 9 o'clock news on Tuesday, May 13, on "The Importance of Trade to the Commonwealth."

The R.I.B.A. Cricket Club has accepted a challenge to meet a team from the L.M.B.A. on Wednesday, May 21, on the Pearl Assurance Cricket Ground at New Malden. Mr. G. P. Parker is to captain the L.M.B.A. team.

The L.M.B.A.'s annual match with the Blue Circle Sports Club is to take place this year on Friday, June 20.

In order to provide its members with an up-to-date picture of the New Towns and of the ideas underlying them, the L.M.B.A. has invited Sir T. P. Bennett, C.B.E., F.R.I.B.A., Chairman of the Crawley and Stevenage New Town Development Corporations, to give a lecture to its members on the subject. The lecture is to take place on Monday, June 30, at 6 o'clock, in the Henry Jarvis Hall at the R.I.B.A.

Sir Thomas Bennett will be accompanied by the Chief Executive Officer at Crawley, Mr. C. A. C. Turner, O.B.E., T.D., F.R.I.C.S., and both will be prepared to answer members' questions on New Town development.

* * *

The County Architect, Shire Hall, Bradford, would appreciate information on contemporary materials and products in connection with a large building project now in the planning stage.

Interviews can be arranged after details and literature have been submitted.

Lead Down £8

The Ministry of Materials announces that from May 1, 1952, the price of imported good soft pig lead is decreased from £163 to £155 per ton delivered consumers' works.

Sir Giles Gilbert Scott driving off from the 1st tee at Camberley Heath Golf Club, in the Royal Institute of British Architects Golfing Society match against the Building Alliance G.S. last Tuesday. The Building Alliance Golfing Society won by one match.

Timber Houses for Scotland

The Weir Housing Corporation, Coatbridge, will manufacture and erect the 3,000 timber houses to be built in Scotland under the scheme announced by the Secretary of State. The houses will be additional to local authorities' normal building.

The basic price of the house is £1,472, excluding site preparation. It has three bedrooms, living room-dining room, kitchen and bathroom. This price is for a minimum of 50 houses on a site within 50 road miles from the factory. The price will be somewhat higher where the number of houses is less than 50 or the distance is greater than 50 miles. The houses will be two-storey, semi-detached cottages. The original plan sent to local authorities last December has been modified to improve the layout and to reduce costs. In particular, through lighting will be provided in the living room.

It is hoped that delivery of the houses from factory to the sites will begin in June or July. The Weir Housing Corporation plan to step up production as soon as possible thereafter to a peak of 40 houses a week.

The Building Research Station have advised that they are satisfied with the system of construction and that the houses, given normal usage and maintenance, will have a life of at least 60 years. The houses will, therefore, be eligible for Exchequer subsidy.

The firm is operating conveyor line and assembly production of house interiors at the rate of 90 per week. This flow will be maintained and the additional timber houses secured by working night shifts with 200 additional workers. In addition the firm will install new sawmills, a battery of drying kilns and timber storage sheds to maintain the additional flow required.

The first 1,000 timber houses will be produced within one year of the start and the remaining 2,000 within the next year. Policy will be to complete construction on each site rather than to dissipate effort throughout a large number of sites.

Conveyor line and mass production methods have been developed to a major degree in this existing plant. Plaster boarding is cut on one line while a parallel line is engaged on wooden framing. Wiring is done on a similar mass assembly basis and sub-assembly and mass assembly feed out completed fabricated sheets.

COMING EVENTS

Georgian Group.

May 10 from 3 to 5 p.m. A visit to Sezincote, Moreton-in-Marsh, Glos.

The Building Centre.

May 12 to 24. "The Hammersmith School of Building and Arts and Crafts and Architectural Training," at 26, Store Street, W.C.1.

London Master Builders' Association.

May 14 at 2 p.m. Area General Meeting to be held at Derry & Tom's Restaurant, Kensington High Street, W.8. Will be preceded by a luncheon at 12.45 for 1 p.m.

Town Planning Institute.

May 16 to 18. Annual Country Meeting, Southport.

CORRESPONDENCE

To the Editor of A. & B. N.

Sir,—"The Education of Architects." *Quis docebit ipsos Doctones?* If I may take liberties with Juvenal. Although Mr. Brandon-Jones still seems to know where he is going (I remember seeing him, in our co-student days, walking down Oxford Street with his double elephant on his head), there seem to be many who don't.

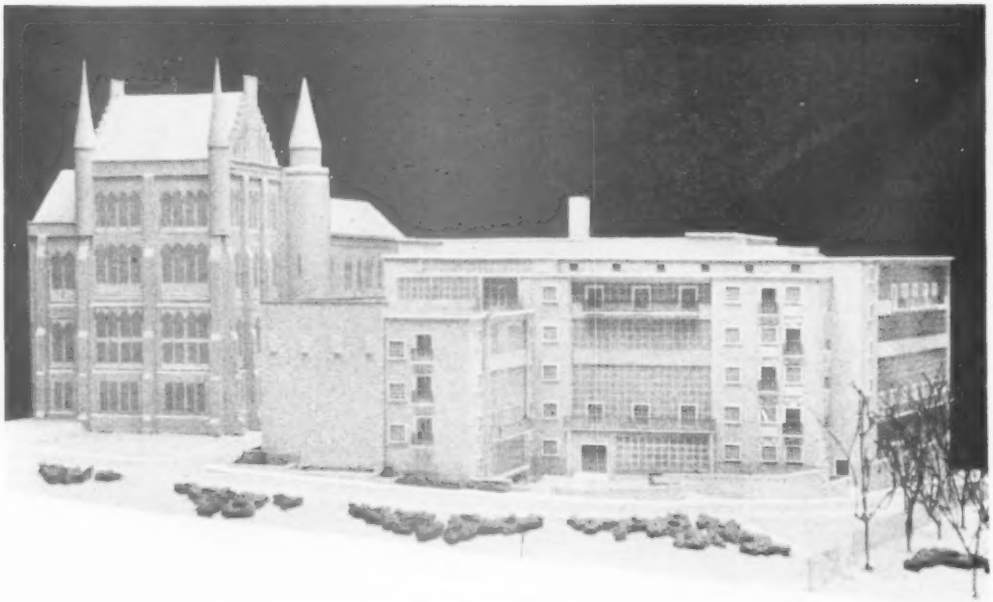
Having left my maiden profession and married education, it has occurred to me that the one might profitably borrow ideas from the other on the subject of teaching.

Students training to be teachers have to do a deal of "Teaching Practice" in schools with real live children, and their final certificate is awarded largely on the success of these practices, which are supervised by the College Tutors and endured, criticized and encouraged by the Heads of Schools. They form a normal part of the term-time curriculum.

If "senior members of the profession" question the value of school-trained men in an office, surely they would be willing to co-operate in having students for "Practice" periods in their offices? They would, thereby, have the opportunity of criticizing the student's work directly to the School Tutor.

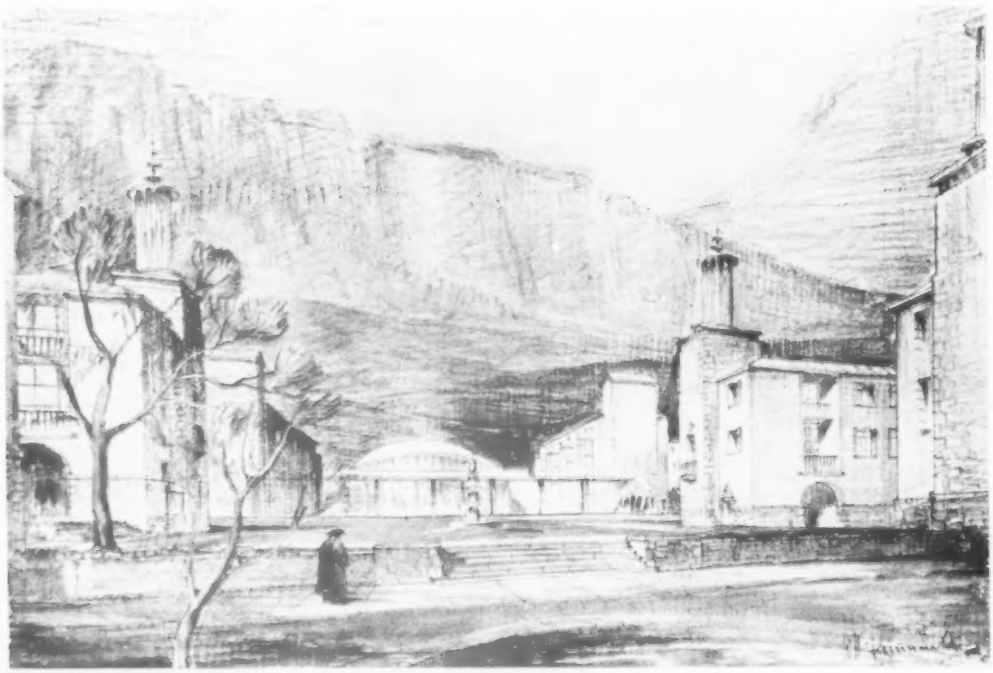
I am, etc.,

M. J. R. Price.



Above : University of Glasgow. Extension to Engineering Department (Model). By J. KEPPIE & HENDERSON

Below : Edinburgh University Halls of Residence. View looking North from South Court. By WILLIAM KININMONTH



ARCHITECTURE IN THE ROYAL SCOTTISH ACADEMY

CHISLEHURST & SIDCUP SECONDARY SCHOOL

for Kent County Council

architect: E. B. MUSMAN, M.A., F.R.I.B.A.
in collaboration with
S. H. LOWETH, F.R.I.B.A.
County Architect

First stage of the school. View from South showing Dining Rooms and Boys' Entrance.

THE programme as first drawn up provided for the erection of a new school for 750 boys in three stages, but this has been considerably curtailed owing to changing ideas and necessary economies, and the school is now to be completed in one further operation instead of two. This final stage is scheduled to commence during 1952.

The site is an attractive corner of Lamorbey Park, Sidcup, which has been taken over by the Kent Education Committee. It is open in character with a slight fall to the north and is gently undulating with pleasant views.

Planning

In the first stage, the classrooms have been planned as a two-storey block facing south-east with a pleasant and restful outlook on to the wooded screen over 100ft away. Running parallel in a wing to the north-west are two Woodwork Rooms, Kitchen, one Dining Room and Heating Chamber. These two wings are connected by the main spine corridor, Boys' Entrance, Cloakroom and Lavatories. (The space occupied by the two Metalwork Rooms off this corridor was originally intended to become additional cloak space on the completion of the Workshop block in the second stage. Owing to the cuts in the programme, however, the rooms will now be retained in their present position.) The Administrative Wing is closely associated with the classroom wing and main corridor and has a separate entrance.

The further accommodation to be provided in the final stage will be broadly arranged as follows:—

(1) The additional classrooms, practical rooms, etc., will be housed in an "L"-shaped extension to the existing classroom block.

(2) The Entrance Hall, Assembly Hall and Gymnasium will be sited to the south of, and connected to, the Administrative Wing and Main Corridor, and will open off the main Entrance Drive.

(3) The second Dining Room will adjoin the kitchen as originally proposed and one further Woodwork Room and Lecture Room will be added adjoining the existing workshops.

(4) Further cycle storage and a second playing pitch will also be provided. Provision for playing fields will be made on land immediately adjoining the school.

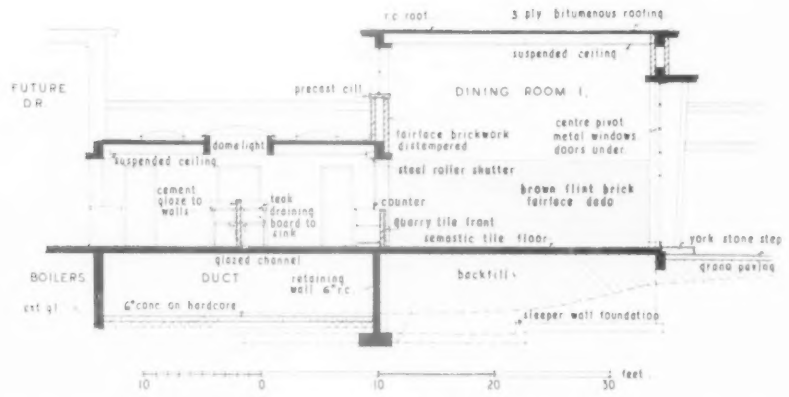
Subsoil and Foundations

Trial holes revealed standing water at varying depths and deposits of Blackheath Pebble. Great difficulty was experienced in the foundation work for the first stage. Generally, the recommendations on which the design and continuation of the foundations were based were for a maximum bearing capacity of 1¼ tons per sq ft at 3ft 6in below ground floor level, except at the lower end by the stream where, in order to obviate settlement due to a layer of soft blue clay, it was necessary to take the foundations down to the underlying layer of stiff blue clay and shells.

In view of the need for steel and timber economy, 9in sleeper walls with a consolidated fill between were used where floors are suspended.

Construction

The building has been designed to a unit of 12ft and sub-divided into 4ft units allowing complete interchangeability of partitions on these centres and close adherence to the stipulated areas of rooms. Due to the prime importance of economy in steel, reinforced concrete has been



employed for the frame. The first floor and roof are *in situ* reinforced concrete consisting of ribs 12in deep at 2ft centres spanning the width of the rooms thus ensuring a completely flush suspended ceiling.

Materials and Finishes

The external cladding consists of High Broom silver-grey facing bricks and the reinforced concrete frame and pre-cast concrete lintols, sills and dressings have been painted a warm yellow. Walls internally are mainly fair-faced flint brickwork except in the Administrative section where plaster is used.

The floor finish generally is of 9in - 9in composition tile with the exception of lavatories and cloakrooms which are granolithic paving with non-slip finish.

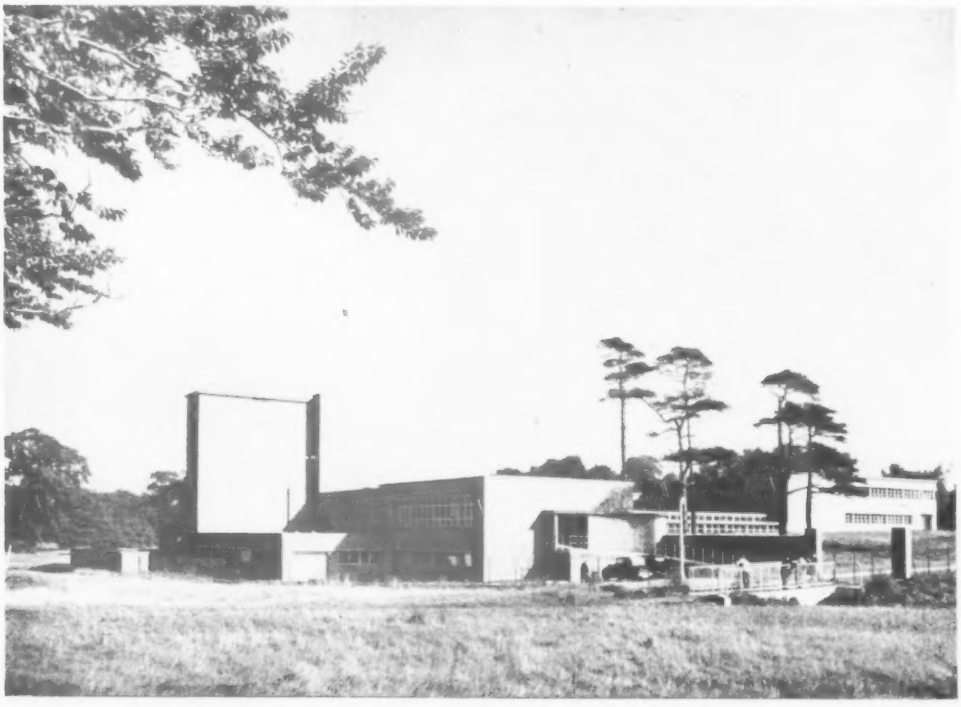
The windows are metal of universal section with 100 per cent opening lights.

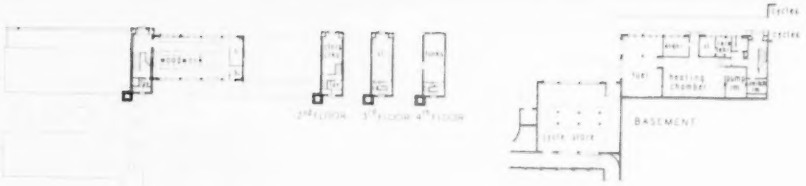
The roof is waterproofed with three-ply bituminous felt roofing finished with ½in granite chippings and laid on two layers of ½in insulating board.

The building is centrally heated by an accelerated low-pressure hot-water system.

The photographs used in this article are reproduced by courtesy of the General Contractor and the *Brick Builder*.

View from West showing kitchen and basement rooms on the left.




BASEMENT

FIRST FLOOR PLAN

GROUND FLOOR PLAN

1

2

1. Corridor showing Boys' entrance on the right. 2. The kitchen. 3. Dining room. 4. A classroom.

The plans of the whole school shown on the facing page have the final stage of development shaded.

3

4

CHISLEHURST AND SIDCUP COUNTY SECONDARY SCHOOL

Consulting Engineers
Hoare, Lea & Partners

GENERAL CONTRACTORS: RUSH & TOMPKINS LTD.

Subcontractors

Aluminium Book Lockers: G. A. Harvey & Co. (London), Ltd. *Concrete Roof Lights*: Luxfer Ltd. *Cycle Racks*: Parker Winder & Achurch Ltd. *Electrical Installation*: Reliance Electrical Co. Ltd. *Fencing*: Rush & Tompkins Ltd. *Flush Doors*: Samuel Elliott & Sons (Reading) Ltd. *Glazing*: Aygee Ltd. *Granolithic Paving (Floors and Stairs)*: G. T. Bird. *Ironmongery*: Taylor, Pearse & Company. *Joinery*: Rush & Tompkins Ltd. *Louvered Ventilators*: Greenwood s & Airvac Ventilating Co. Ltd. *Mechanical Installation*: Arthur Scull & Son Ltd. *Painting*: Franklin Bros. *Plastering*: Plaster Specialists Ltd. *Plumbing*: J. Martin (Brockley) Ltd. *Precast Concrete Lense Units*: J. A. King & Co. Ltd. *Precast Concrete Work (Cills, Lintols, Copings)*: Broadmead Products Ltd. *Precast Terrazzo W.C. Partitions*: Art Pavements & Decorations Ltd. *Pressed Steel Stairs, Stair Balustrades, Railings, Entrance Gates, and Cloakroom Equipment*: George Wright (London), Ltd. *Reinforced Concrete*: Trussed Concrete Steel Co. Ltd. *Roller Shutters*: Haywards Ltd. *Roofing: Bitumen*: William Briggs & Sons Ltd. *Sanitary Fittings*: Wm. E. Farrer Ltd. *Semastic Tile Flooring*: Hollis Bros. Ltd. *Stone Facings*: Broadmead Products Ltd. *Tarpaving and Tarmacadam and Curbs*: A. C. W. Hobman & Co. Ltd. *Wall Finish (Cement Glazed)*: Modern Surfaces Ltd. *Wall and Floor Tiling*: Parkinson (Wall Tiling) Ltd. *Windows (Steel)*: W. G. Kaleyards Ltd.

Below, Boys' entrance. Right, the Headmaster's entrance.

CHISLEHURST & SIDCUP COUNTY SECONDARY SCHOOL

BRITISH STANDARDS AND THE ARCHITECT

R.I.B.A. Science Lecture held at the Royal Institute on April 22. Mr. R. N. Wakelin in the Chair

THE CHAIRMAN: We have with us to-night Mr. G. Weston, B.Sc., Technical Director of the British Standards Institution, Mr. P. Cutbush, A.R.I.B.A., who is in charge of the work on the building side of the Institution, which comprises the application of British standards to building, and Mr. E. D. Mills, F.R.I.B.A., who has represented the Royal Institute on various B.S.I. committees for the last four or five years. Mr. Mills is in private practice and is the author of a book "The Modern Factory."

It is intended to discuss "British Standards and the Architect." There is no prepared paper, as is usual with Science Lectures, but the discussion will be in the form of questions and answers. I will ask Mr. Mills to put the first question.

MR. EDWARD D. MILLS: To open this discussion I should like to ask Mr. Weston to explain to us exactly what the British Standards Institution is, how it was formed, how it is organized, and—an important factor in these days—how it is financed.

MR. G. WESTON.: The British Standards Institution is now over fifty years old. It commenced its work in 1901. It is a non-profit-making industrial organization, and it is responsible for the preparation of national standards. I think I can say that the work has been of some interest to the architect from the very outset, because the origin of the British Standards Institution was a suggestion that steel sections for building should be simplified and that a standard range should be laid down. As a result of this proposal, a committee was formed, and since then the work has gone steadily forward. The organization now consists of a committee structure with no fewer than 2,300 committees. There are fourteen thousand members of industry generally who serve on those committees, and I should make quite clear that that service is rendered free of charge to the Institution, though not, of course, free of charge to industry. Therefore it does represent a very valuable contribution to the work of the Institution.

Perhaps I might explain briefly the structure of our committees. There is a General Council which is responsible for the control and supervision of the organization as a whole. Under the General Council there are four Divisional Councils. It is their responsibility to supervise, co-ordinate and generally organize the work of the four main sections which we recognize as the sections of industry—building, chemicals, engineering and textiles. You will have seen from the Press that with the transfer of the utility scheme to the British Standards Institution the work of our Textile Section is growing rapidly at the present time.

Under the divisional councils there are industry standards committees. In fact, these committees are the backbone of the Institution, because they are responsible for deciding what standardization shall be undertaken for the industry they represent. Under the Building Divisional Council, for instance, there are ten industry standards committees covering the various materials used in the building industry. There are committees—for example—for asbestos cement and all its products and for cement, lime and gypsum. The Timber Industry Standards Committee is responsible for all the joinery, plywood and other materials of that type. There are also the Hardware Industry Standards Committee and the Sanitary Appliance Industry Standards Committee.

The industry standards committees include representatives from the manufacturing side, the users, the builders, the professional institutions and the research organizations. They are responsible for deciding what standardization shall be carried out for their industry, as I have already said. I should like that point to be made quite clear, because we on the staff of the Institution do not decide what standardization shall be undertaken: that is the responsibility of the industry standards committees.

When it has been decided to prepare a standard for a particular material or component, technical committees are set up including the experts in a particular subject. Again the members are drawn from all sides concerned, and they carry through the work of preparing the standard.

To date, there are something like two thousand standards, and there are over fifty industry standards committees in all. I think we are now nearing sixty, so you can see that we are covering very nearly all sections of industry in this country.

Mr. Mills asked how the Institution is financed. Our revenue comes, broadly, from three main sources. First, we receive contributions from industry, either from firms or from trade associations or other organizations. Contributions from this source amount at the present time to approximately £94,000. Secondly, we receive a grant from the Government which is equal to the industrial grant. For the year which has just closed it was £90,000. Next year it will be £94,000, corresponding to the contribution from industry. Thirdly, there are the sales of our publications, which for this year run to something like £65,000. This makes a total revenue of between £250,000 and £260,000.

The distribution of standards is at the rate of nearly a million a year, and it may be of some significance that one in four of these standards goes overseas, which indicates the interest taken in our work in the corresponding countries abroad.

MR. MILLS: Thank you, Mr. Weston. Now we have learned something of the background of the British Standards Institution, we ought to discover exactly how standards are prepared. The way in which standards come into existence is probably not generally known amongst architects. Perhaps Mr. Cutbush would give us some indication of the various steps in the procedure from the original proposal for a new standard to the final publication of the standard. Perhaps he would tell us who proposes the preparation of a standard and how the committees dealing with standards are constituted. At the same time, it would be interesting to learn what part the British Standards Institution plays in the preparation of standards.

MR. PATRICK CUTBUSH: Proposals come to us from various sources. We may be approached directly by manufacturers or users or distributors. Proposals may emanate from our own industry standards committees which—as Mr. Weston has explained—are made up of users, distributors, makers, Government departments, and so on. We also find that whole industries plan a programme of standardization and submit it to the Institution for implementation.

When we receive a proposal which does not come from one of our own industry standards committees, it is referred to the appropriate industry standards committee for approval to start working. We may not, on occasions, have a committee fitted to examine the proposal, and in those instances we call a conference of organizations which will, we think, be directly interested in either making or using the product concerned. Once it is agreed to proceed with the preparation of a standard, we form a technical committee. These technical committees are always built up of experts from the users, distributors and makers. They prepare a document and when it is completed it is circulated for comment to organizations and in certain cases to individuals who are known to be particularly knowledgeable and can contribute usefully to the problem. In fact, the number of copies of a draft which we circulate at the comment period varies very considerably. It may be as few as 300 to 400 or as many as several thousands.

We normally give about two weeks for comments, and when these are received, the technical committee examines them and amends its draft in the light of these comments. When the final redraft is ready, it is submitted to the industry standards committee for approval before publication. It has then to be signed by the Chairman of the Divisional Council and the Chairman of the General Council to indicate that it has gone through all the necessary stages.

We edit and arrange the final form of the standards guided always by the advice of the technical committee.

Mr. Mills asked what part the staff of the Institution played in this, and Mr. Weston might like to answer that question.

MR. WESTON: I tried to answer it in part in my first statement. The British Standards Institution staff only serve, in effect, as the secretaries for these hundreds—I was going to say thousands—of committees that now exist. We try to obtain technically qualified people to deal with the different ranges of subjects, so that they can serve more efficiently and can follow the discussions more intelligently; but we do not take a leading part in deciding what the standard should be. We leave the experts to decide that problem and we carry out their instruc-

tions. We now have a technical staff of forty to fifty to serve as secretaries to the various committees.

MR. MILLS: There is one other point on which we should like some enlightenment. In the minds of many people there is still some confusion as to the rules applied by British standards and codes of practice. Could someone explain the relationship between these two documents?

MR. CUTBUSH: A code of practice is essentially a method of carrying out work. Standards relate to the components, the materials—maybe even the terminology—which, assembled together in the manner recommended by the code, produce the finished product. This code work was contemplated just before the war started, and preliminary steps were, in fact, taken by the British Standards Institution to form a code of practice committee. Owing to the war it did not materialize, and in about 1942 or 1943 the Ministry of Works scheme—the present Council for Codes of Practice—was started. Slight confusion may perhaps arise from the fact that codes of practice are issued as British standard codes of practice, as we act as publishers to the Council. We also try, as far as we can, to assist the code committees in their work.

It is most important that the profession should realize what an enormous amount of work certain of their members have done in preparing codes of practice. Many of them have contributed information which was never available before. At the moment there are about seventy codes of practice which have been issued. There are a number more to come as part of the programme which is being put through. There is a further programme which will obviously take many years to complete.

MR. MILLS: Part of my next question has already been answered by both Mr. Cutbush and Mr. Weston in their earlier remarks. They have already told us that a vast number of standards are issued every year, and they have also given us the general classification of those standards. But I should be most interested—and I think you would be too—to hear from the representatives of the British Standards Institution what they feel are the principal advantages of British standards and what, in their view, is the advantage of the simplification of types and sizes which arises from the adoption of a British standard.

MR. CUTBUSH: There are a lot of standards which come into the building field. Some of them we, as an Institution, did not prepare. You have, of course, standards set down by legislation, some of which we endeavour to supplement; but subjects such as accommodation areas and matters arising out of overcrowding Acts, and so on are not our affair.

Our standards fall broadly under a number of headings. There are those which deal with types and sizes and there are those which deal with performance. There are those which cover terms and definitions, and as an additional issue there are questions of simplification.

We feel that terms and definitions are basic. It is hard to start any serious work on any subject until you are quite sure you know what language you are talking. We do like, therefore, to establish terms and definitions quite early in any project. Sometimes these are issued as separate standards but quite often the necessary definitions are incorporated in particular standards.

We like to base our standards on functional requirements, that is to say, performance tests; and then to develop tests which will prove whether or not a component complies with the functional requirements. We will come back to that a little later: there are certain difficulties.

Another field has interested us—agreed sizes, types and materials. Those have very definite advantages, although possibly not quite the same advantages as performance requirements may have. However, part of performance may, in fact, be agreed sizes, because of the assembly of one product with another.

Simplifications of types and sizes is a development in order to make the maximum use of plant and machines which require elaborate or costly preparation.

Mr. Mills raised the question of what are the benefits. The benefits are very difficult completely to pin down. The aim of the whole movement towards standardization is to obtain economy in production. You get actual economy where goods are produced, economy in stocks and stocking by everyone down the line from the maker to the ultimate consumer. There is the question of ease of replacement where parts or articles in use are apt to become damaged and need replacement. There is the opportunity for pre-planning.

It is our view, and we insist on this, that, for example, if buildings are uneconomic from a national point of view, then all those associated with their production are contributing to a wastage of the national resources of labour and material. I rather think the building industry is one in which productivity has not quite kept pace with the general average increase in other spheres, and we believe that one of the contributory factors is probably the insufficient adoption of standardization in the industry.

A further point raised by Mr. Mills was the simplification of types and sizes. For economy under mass-production conditions, which are very necessary in certain types of building and in certain types of other production, there are obvious advantages if you can meet the general needs by a limited range of products which can be produced in very considerable quantity. For example, some years ago we were preparing a standard for the ordinary light-gauge copper tube used in building. Until then it had been the custom to use internal bore as the basic requirement. We found by examination that if you based your sizes on the external diameter instead of the internal and picked up the differences in thickness of the wall of the tube by deduction from the bore—the actual reduction of the bore is not very serious—you could cut down the number of types of fittings by something like dividing by five. This was an enormous saving in production.

MR. MILLS: I should like to come back to the question of performance standards, because I feel there is a very considerable feeling amongst architects that British standards should be based on performance requirements. I believe it is the practice in some countries for standards to be based entirely on performance. The view of the British Standards Institution on this subject would be of great interest to us.

MR. WESTON: I am very glad you have raised that point, because it is one of considerable importance and one to which we have given a lot of attention. I think there is a good deal of misunderstanding about it.

As a general principle, we agree wholeheartedly that it is preferable every time to define your standard in terms of performance—what you want the material to do, or the performance you require from the article. You then leave the manufacturer free to use his own initiative in the design and the method of achieving performance. The snag is that there are two essential requirements before you can do that. First, you must know the method of test by which you are going to determine the particular characteristics that you want. Then you must know the criterion you fix for the result given by your method of test. Alas! All too frequently that information is not available.

Apart from that point, we have to recognize that for many of the more simple components, it is easier to define your standard in terms of a material and a dimension. Take drain-pipes, for example, in terms of material. Supposing you were to write down the tests the material would have to withstand in order to be suitable for use in a drain-pipe. You have strength, resistance to impact, resistance to water, life. The series of tests required would make the article very expensive. It is much easier to say "cast iron $\frac{1}{4}$in thick" or "asbestos cement $\frac{3}{8}$in thick," or whichever way round it should be, than to attempt to put down for each drain-pipe generally the tests that should be passed. We are continually giving this point serious attention, and as far as possible it is our endeavour to work to performance tests rather than design tests, because we are very well aware of the serious criticisms against trying to crystallize design.

MR. CUTBUSH: For a change, I might ask a question. It has often been said that standards check development. We do not think that is true. In fact, we have seen very obviously the reverse happening on many occasions where a revision of a standard has put into practice some development of the research organizations within an extremely short time. It is a point we ought to make: that there is no difficulty in preparing a revision of a standard very quickly. Some, in fact, have started almost before the original has been published.

We ought to keep off æsthetics at this point, because we should talk about that as a very separate issue. What we have to bear in mind at this stage is the question of the point at which we stop freedom of the individual. In other spheres all of us accept a limitation to our freedom—there is the 30-mile speed limit, for instance. We may not like it but we accept it. We support control of development in certain conditions. We feel that the same ought somewhere to be applied to the products used in building—that there should be some point at which, by co-operative agreement, we can say that is the limit of freedom.

MR. MILLS: I assume that you are thinking in terms of freedom of design. The answer, of course, is that it all depends, and you have suggested that answer already. But obviously the matter ought to be developed a little further.

The first point to consider—and you have given me a lead in that direction—is that there are a number of categories of British standard specifications which have no relationship to design at all. The first category covers things like B.S.1162 for mastic asphalt for roofing or B.S.12 for portland cement. There is also the case Mr. Weston mentioned of salt-glazed drain-pipes. Obviously, the design of these from the purely design point of view has little importance and in some cases no existence. It is probably true to say that the majority of British standards concerning building come within that category.

But there is another category, a smaller group which includes items with a relatively small design content for things like air gratings and similar small building components. This section is of some importance.

The most important group is that of standards for things like steel windows, street lighting columns, and items of that sort, which have a very high design content.

The first group, as I have already said, has no design content and can be ignored from the point of view of your question. The second group is one where it is desirable, where possible, to provide some mechanism which allows the individual manufacturer to prepare his own design for the particular item within the outline or the broad framework of the British standards specification. We as architects can then have a choice of two or three items, all complying with the British standard specification but of varying appearance because they have been created by different designers. My main requirement there—and, I think the requirement of most architects—is that the design produced should be the best possible designs by competent industrial designers.

It is the third category that is of the greatest concern. It is in that particular category that the responsibility for the design factor should be left with the architect and the manufacturer, outside the British Standards Institution altogether. It is this class of standard which offers a very strong case for performance standards. Manufacturers could then employ competent designers to design the items concerned, if necessary. Street lamps fall within the framework very well.

This matter is important because things like metal windows have a very great influence on the appearance of a building. As Mr. Cutbush says, the question of æsthetics should be left until later in the discussion.

The first part of his question referred to the connection between British standards and their development and progress generally in the development of building materials. I am afraid that here there is a general tendency for manufacturers to consider that once an article or a building component has been made the subject of a British standard, it remains static for a very long time. One ought to consider what a standard should be, and the answer is that a British standard is something which is intended primarily to produce not a repetitive standardized article but a certain quality below which materials and articles are not acceptable. It implies neither a minimum nor a maximum quality but rather an optimum. I feel personally that in the past there has been a tendency for the British standard to be regarded as the maximum quality and the manufacturers have tended not to produce articles above the standard level laid down by the British standard. They ought, on the other hand, to be encouraged to produce materials and articles of a quality equal to or higher than the quality laid down by the British standard.

In respect of what I have just said, it is obvious that there are tremendous advantages in the system of British standards, and, therefore, it might be interesting to hear what the advantages are to the architects in particular from the British Standards Institution point of view.

MR. CUTBUSH: Let us start with specification writing. It may be that architects do not often write specifications, but at least they write notes for those prepared by their quantity surveyors.

You will find that the British standard reference can very quickly give either the builder or the quantity surveyor the information he needs to know. To write an adequate specification for many of the materials or even the components that are used to-day requires frequently more knowledge than any one of us can expect to have. It would take much more paper than we can afford to use in our specification or our quantities.

There is one thing, however. I would appeal to you when you do quote a British standard to give the full information needed to make it usable. For instance, if you have to specify a bath, please give, in addition to the B.S. number the size, type and colour, because a straight reference to the standard does not get anyone anywhere.

What are the advantages apart from ease of specification? The greatest advantage is the accumulation of knowledge from many sources to produce a satisfactory level of requirement, as far as possible, not too low and high enough to avoid undue maintenance. There are further factors, in that if you are using standards, the manufacturers in most industries are in a position to supply to a specification, and you have an easy means of checking that what has been supplied to you is what you want.

A point on which I had better touch before we get off this subject is that some of you may have some doubts as to how far we expect British standards to be used in building. We believe that from the point of view of material you can use British standards for nearly all types of building. A large number of components, on the other hand, have been prepared from the point of view of economic housing.

Does that give you roughly what you want?

MR. MILLS: Yes, I think it does.

MR. CUTBUSH: Earlier in the evening we said we would discuss æsthetics a little further in relation to standardization. I should like to suggest that due to technical developments, and especially the increased cost of labour, producers have to take the maximum advantage of mechanization. Mechanization is of limited value if the goods to be produced are not such that the manufacturer gets a long run of similar products. That permits him to design special machines or to use machines on which the changes to the setting up are infrequent. In many industries patterns and jigs are necessary and may be extremely costly. To offset any high costs of that nature, you must have a large output without change.

On this question of æsthetics; some little while ago a British Standards Institution committee was discussing asbestos cement rainwater pipes. The R.I.B.A. representative, who shall be nameless, suggested that the design of the socket on the pipe should be left to the discretion of each architect within certain specified limits. The manufacturers replied that that was quite all right by them if the architect would pay £20,000 for the making of the first set of moulds. After the first one of each pipe and fitting he could have the rest at the usual price. That is the sort of problem which we have to face. We have to accept the fact, I think, that with increased mechanization the makers must have stockpiles. What, then, can we do to meet that position? What we have to avoid, I feel, is unnecessary and useless variation. For instance, a case was quoted to me the other day where someone said a particular component was costing 12½ per cent more. I asked why he was not using a British standard component, as there was one for that particular article which was not too bad. He said that he did not think this would be any better, but at least he had the satisfaction of designing it himself. I do not think the clients of the building industry, taken as a whole, can afford 12½ per cent for architectural whims. I hope this is not too controversial!

I should like to touch on a point Mr. Mills mentioned earlier—windows. We had a long argument about it. I obtained two prices last week for wood windows for a ten-house housing scheme from a mass production joiner who also makes special designs. The windows to the B.S. design worked out at £35 a house. Using the same content but making the shapes different, the price went up by 30 per cent, which is approximately £100 on ten houses. £100 on ten houses is £3 million on three hundred houses, which is 2,500 more houses at £1,250 for the same money. Can we afford it? That is all!

MR. MILLS: Obviously that is the heart of the matter, and we shall hear a little more about windows in a moment, I think. But to look at the wider field of the influence of British standards on æsthetics, once again we have to look at our categories, and the vast majority of British standards have no influence at all on the æsthetics of a building. After all, it does not matter what size and colour the drainpipes are. It will not affect the final appearance of the building. But such things as gutters can have an effect, though not a very serious effect. The trouble begins to be really serious when we are working in the larger units. It is obviously a fact that we have to accept—the present production situation in regard to many building components. The asbestos gutter unit is one case in point. Anyone who wanted special asbestos gutters specially designed would find it cheaper to have them done in copper or some such quite different material. Therefore, within the world of mass production, one has to accept the limitation of mass production. But as yet mass production does not fully cover the whole of the building field.

Here I am afraid we come back to metal windows. With metal windows, or windows of any sort, the appearance of the building can be radically changed by the use of a standard window which may not necessarily fit into the design of the building and be in accordance with the general conception of the building. There is a possibility, if we are not careful—and I hope Mr. Cutbush does not want this to happen—that architecture might become a sort of jigsaw puzzle of random standardized units, assembled as carefully as possible but producing a somewhat hotchpotch result. You get this in many cases when that approach has been made by the builder in question. Unless a building is designed on the basis of a complete modular unit it is not satisfactory. But that is another question we will deal with later on.

The design of the items making up a building can affect the overall appearance of the building in many cases, and it should be left to the designer. The standards produced by the British Standards Institution should be a guarantee of quality, performance and serviceability, and not of design.

The British standard specifications for metal windows fix the overall sizes of windows. This, in many buildings, determines the spacing of columns, stanchions, brickwork, openings, and even planning grids. In the case of industrial buildings, elements of many kinds can be affected

and would have to be arranged to fit the windows. If the architect follows the dimensions and designs laid down, for example, in B.S.1787, it is likely to lead to uneconomical design, for the correct method of arriving at the solution is for the window sizes to be determined to suit the needs of the building concerned.

The architect must consider the appearance and the cost of the building as a whole, and a small increase in cost in having metal windows for a factory specially made will often result in very considerable economies in cost on other elements of the construction. In this case, æsthetics and economics are interwoven, as I think Mr. Cutbush pointed out for housing.

I feel that there is no real case for standardizing windows, particularly for industrial or school buildings or, indeed, other large elements of that sort where they can have a very big effect on æsthetics until—and there might be a case then—we can have a completely co-ordinated modular system, which—as I said before—is another question.

Following on this, you have probably gathered that I do not see how, in many types of buildings, architects can use some of the existing British standards because of their very serious influence on design. It would be interesting to hear what you feel about that point, Mr. Cutbush. Do you feel that building standards should be applicable to all building work?

MR. CUTBUSH: I do not think for one moment that they should be applicable to all building work. I think I said earlier that standards which cover materials are probably generally applicable everywhere. In the case of components, particularly the larger components, there is no doubt that there are many instances where they are not applicable, and one is justified in using products, even at greater cost, other than the standard products.

On the other hand, it should be borne in mind that there are fairly considerable demands, probably from those who are less interested in their buildings æsthetically, for articles off the shelf. If we can assist to produce articles off the shelf in a more æsthetic form, we may be doing a great deal more good than if we just sit back and say we do not want these for our buildings, so we will not let anyone else have them. Perhaps we had better leave that subject. We could discuss it all night!

I should like to ask you, as a practising architect, what steps you think architects take to know what standards exist and how you think they are likely to be using standards. It does have an effect on how we produce and what we produce for.

MR. MILLS: To answer your question in the opposite way from the way in which you have asked it, I think architects are beginning to use standards more fully. I know for a fact that we are using them in my own office far more than we did before the war. We find that it is time-saving to be able to refer to the British standard for our drain-pipes and so forth, but not our industrial metal windows! It does, as Mr. Cutbush pointed out, lead to economy in specification writing, and it means that we know right from the beginning what we are getting and that we are getting what we want.

Whether architects are obtaining all the information they need about British standards and the work of the British Standards Institution is another matter. Obviously meetings of this sort and the fact that the proceedings will be published in the *Journal* of the Royal Institute will be helpful. I sincerely hope that the recipients of the *Journal* will read them. This meeting does mean that there is an awakening of interest in British standards and in the work of the Institution and I am also very pleased to see that most of the technical journals now give not only publication notices of the work of the British Standards Institution but in many cases run a digest feature giving a summary of most of the important standards as they are published. The R.I.B.A. Journal and most of the others contain such a summary. Thus, a way of finding out about standards and about the sort of standard that would be useful is open to architects if they are interested enough to take advantage of the facilites that exist.

The Library here has a complete range of British standards which is always available for reference.

There is one point I would like to ask Mr. Cutbush as a follow-up to this. Although the information is available to architects, there is the difficulty of the high cost of British standards publications. In many cases for a very small volume one is asked to pay anything up to 7s 6d in spite of the non-profitmaking aspect of the Institution to which Mr. Weston referred earlier. To keep in touch with all the new British standards—unless one is lucky enough to receive them for review and therefore gets them for nothing—would be beyond the means of most architects. Can you tell us why, for example, British standards cannot be produced in a less expensive way, perhaps a one-page synopsis we could buy for 2d, and then decide, if we think it would be of value to us, to buy the full standard? Perhaps an intermediate course would be to publish them in some sort of punched form instead of in an expensive linen cover which we could put in a standard folder for reference. Is there any possibility of that, Mr. Weston?

MR. WESTON: The question of the cost of publications is very acute. To show you the problem we are up against, I might mention that while the income from the sale of our specifications was estimated this year at £65,000, as I said earlier, our printing bill is £63,000. As we have to maintain a staff of over forty to deal with distribution, you can see that we are not making any money at all out of our publications. We are losing heavily, and even at present prices; so that the problem is a very difficult one.

As to how we could ensure that the specifications are made available more freely, I can say this. If the distribution were to increase so that instead of printing only 3,000 copies we could print about 50,000, the price could, of course, be reduced to a quarter of what it is now. But with a small sale and with the present high printing costs, we really cannot reduce it.

It is worth trying to meet Mr. Mills' point about a synopsis. We have prepared what we call a handbook for building materials and components in which we have given the essential features of some three hundred specifications. We feel these cover, broadly, the field in which architects and builders are generally interested. This is available at the modest cost, if I may so put it, of 25s. If you assume that the average cost of a specification is 3s, or perhaps more, you can see that there is a great saving in being able to get three hundred for only 25s.

The question of loose-leaf printing has been very fully investigated. The problem is that even if you have a loose-leaf publication, it has to be handled by your staff separately, and we have found that the cost to our sales department of handling only one document—even if it is only being sent by post—is about 6d. You have also to allow for membership discounts, so you will not save very much out of 2s after printing costs have been covered.

I have mentioned membership discounts. One way in which architects can keep fully informed of what work is being done is by taking out membership of our Institution. The minimum subscription for a firm is about five guineas, but for an individual it is as low as two guineas. You will agree that at present prices this is a very modest figure. For that, you will be kept fully informed. A monthly information sheet is made available, giving details of all new specifications, all new drafts and all new work that has been started. It also contains information about standards prepared in other countries. The handbook and a minimum number of standards will be made available to you free of charge. In this way architects can keep most fully informed of what the British Standards Institution is doing.

MR. MILLS: I can testify personally to the value of the handbook and I am glad that you mentioned it. It is an extremely useful volume. I got mine as a review copy, so it is doubly valuable to me. It is used extremely widely in my office and we find it of particular interest, as would most architects, in that it gives a brief synopsis of the contents of most of the British standards concerned with building.

Perhaps we could deal with another subject before we draw to a close. A point that does interest architects is that when they are converted and satisfied and use British standards, they would like to know that the things they have specified according to British standards are in fact being supplied and used according to the British standards. What steps can the architect take to find out if the goods he has specified do in fact comply with the appropriate standards?

MR. WESTON: That is a very important point. Many of our standards include the requirement that every component purporting to comply with the standard should have the letters "B.S." and the number of the standard put on it. You will find that quite a number of building components require that. By looking at the article you can see whether it is marked with the B.S. number. That, however, is only the maker's guarantee that he has done his best to comply with the standard, and we realize that this is not always as complete a guarantee as we would like it to be. Therefore in addition the Institution has its own certification mark. You may have seen it or you may have read about it. There has been a lot of publicity about it recently in connection with the transfer of the utility scheme. We have what is called the "kite" mark, and that mark can only be applied under licence from the Institution in conjunction with a scheme of production and testing which ensures that it is only supplied to an article which fully conforms to the British standard. Those strange sections that you saw on the table outside were specimens of articles that had not only the B.S. number but also the kite mark attached to them. They operate under a scheme of production control and inspection which ensures complete compliance. This is growing at the present time, and there are certification schemes in relation to seventy-three British standards in all; that is to say, the materials

of seventy-three standards. We feel that as the value of the certification marking scheme increases—and it is increasing rapidly—there will be an additional assurance that you have articles complying with British standards.

MR. CUTBUSH: As a final question, may I ask what you think the architectural reaction to modular co-ordination might be? It seems to me to be a logical development of standardization which should come in time. It would obviously have been advantageous if it could have come much earlier. In this country we have, over the course of many years now, settled the dimensions of many things. But perhaps the Americans were more fortunate because they started their modular scheme at a moment when they had much less established even trade standards than we and had very little in the way of national standards. They are building their national standards on it. I am not sure that I ought to ask such questions when the Chairman of our own committee is sitting in the room!

MR. MILLS: I propose to answer the question quite broadly, and I hope that the Chairman of the Co-ordination Committee may fill in the very many gaps that I am bound to leave.

Briefly, the answer is that architects are very interested in modular co-ordination, and this is shown by the fact that the R.I.B.A. have had a committee examining this subject in great detail. It is obvious that the modular system is particularly appropriate for certain types of building. This is shown by the success of the Hertfordshire schools which are not only good examples of modular co-ordination but excellent examples of contemporary architecture. It is true to say that the whole system was designed by the architect so that every unit was properly related to every other unit, with an overall æsthetic conception. This has resulted in a feeling of unity and completeness which is often lacking in modern buildings.

This brings me back to the point made earlier: that British standards cannot in themselves influence design to any great extent, but a system of modular co-ordination controls devised by the architect can have a very good influence on architecture.

Another good example of this can be found in Finland, where, I am told, the whole standardization system is in the hands of the Finnish Association of Architects who not only control the shape of windows and things like that but everything else on a standards basis. It is therefore possible to co-ordinate all the items in a building so that they relate one to another not only in dimension and quality but in design and quality of materials and performance as well.

Points from the Discussion

MR. A. A. MACFARLANE, A.R.I.B.A.: Just after the war I made some enquiries of the Institution and amongst manufacturers about what is really meant by "British standard." Was it a minimum or a maximum? I was told that it is certainly not a minimum, nor could it be regarded as a maximum, nor, in fact, could it be regarded as an optimum. Some standards, I understood, largely from manufactuers, were low because of disagreement amongst themselves even as to an optimum standard.

In my own work I have rather disregarded specification to British standards, because for one thing one cannot know all that is in the British standard, and it takes some testing time to find the number of the proper standard if you are writing a specification. There is certainly Handbook No. 3, but you find only an excerpt from the specification and the essential information may not be there, so you have to buy the specification, in any case.

British standards inflate costs quite a bit. To take drainage, before the war we used a lot of seconds of salt-glazed drains. Nowadays, architects and even more particularly quantity surveyors specify British standard-tested salt-glazed pipes, and the cost of seconds is very great. It may be as much as 50 per cent, and that is an appreciable factor if there is a large amount of draining.

The question of freedom of design has been raised. I do not specify British standard skeleton frame flush doors, because they are positively poor and there are much better patterns on the market.

In the case of electrical goods, I was looking at a prototype shown to me by a manufacturer, and the British standard mark was not there. I said to the manufacturer: "It would help greatly if the British standard were put on these components you are making. He was very disgusted and said that the component was far superior to the British standard, and he would not put the mark on it. That, of course, is a wrong deduction, but it brings up another point. Flush doors, for instance, are not marked in any way as being British standard. All you get is "Ext." for the external doors.

To depart from the British standard for windows, particularly wood windows, where there was a long run, would not cost much more than to stick to the standard, provided the timber content was not greater. With a small number, as Mr. Cutbush has said, the cost would be affected very seriously.

MR. WESTON: The level of the standard is a question which each committee has to consider if a satisfactory article is to be provided for the particular type of commodity which is being specified. I am quite prepared to admit that it may not be the highest grade. The standard for drain-pipes, which is a good standard, is more expensive than the qualities which are not so good; and obviously if you are going to have a higher quality, you must pay for it.

We look to the experts to determine the level of the standard, and that is why we should like the R.I.B.A. to take a more active part in the work of the committees, so that they can bring their point of view to bear and let us know whether they feel a standard is too high or too low.

There is also the point that if Mr. Macfarlane has found the summaries in the handbook do not contain the essential information, we should be glad if he would let us know. We have tried to ensure that it does give such information and we would welcome criticisms so that we can take account of them in the new edition which in due course will have to be prepared.

MR. CUTBUSH: There was a criticism of the British standard for flush doors. We have been trying to revise it for I do not know how long. We are trying to put it on to a performance basis, and we have had first to define how the door should be tested.

Mr. Macfarlane said that if the run was long enough for wood windows the price would be the same. The run is somewhere in the region of five thousand frames.

MR. A. POTTER, A.R.I.B.A.: Supposing, in a fit of virtuous flushness, an architect decided to do something about British standards. He would buy that very valuable publication, the handbook, for 25s, and he would arrange to receive the monthly information leaflet. The latter contained new specifications and amendments, and he might find that his handbook was already out of date. It is very important that there should be some means of keeping it up to date, and one method would be to print the monthly sheet on one side of the paper only so that it could be cut up and pasted in the handbook. It would not eliminate the need for buying the full specification now and again.

Mr. Mills and Mr. Cutbush spoke about the benefits to be obtained from standardization. They mentioned economy in production and reduction in stocks and the ease of replacement. I do not think anything was said about economy in use, if I may employ that term. It comes to this: that the architect obviously wants to buy each component cheaply but he is not interested in buying cheap components so much as components at a price his client can pay. His interest is in a cheap building, and it is important that in buying cheap articles he does not involve himself in higher cost in incorporating them in the building. This leads back to the question of modular co-ordination and I am sorry we have not heard more about it. So far British standards have rightly been based on materials like brickwork and so on. One has components which go into a reasonable kind of building because brickwork is a very flexible material and there is no difficulty in joining these articles, because you have a plastic medium in between. We are now getting away from this type of building to some extent, and the whole question of the size of component is becoming more important. It comes to this: that we are to have larger elements, and if we are to have them at a price our clients can pay we want the British Standards Institution to consider very much more closely how they are to be joined up to produce the building. That is very important for the architect who has on the one hand a well-organized and rather terrifying array of manufacturers and on the other hand the building owner who, as I say, wants components incorporated at a price he can pay.

THE CHAIRMAN: The first question has something to do with Mr. Weston's £65,000.

MR. WESTON: We appreciate the problem but it is inevitable with that type of publication. We shall be pleased to have any suggestions as to how it can be remedied. We have given a lot of thought to this matter, and the only solution we can see so far is to issue a supplement every twelve months indicating what specifications have been added and what modifications have been made. Specifications go out at the rate of about twenty-five a month, although not all of them, of course, apply to building.

MR. RICHARD HENNIKER, F.R.I.B.A.: I do not think that the handbook can be used in quite the sense people have suggested. I look upon it as a means of checking whether there is a British standard. It does not matter whether it is up to date or not, because you have almost certainly to get the specification. When you have obtained it, you may or may not find that you wish to incorporate it in your standard specification. A certain number I constantly use and keep up to date. Others—although I am interested in them—have no practical application for me. I am very much interested in the business of keeping specifications up to date, particularly in filing those which I have. Per-

sonally, I use a periodical list of building subjects as a filing index for these specifications. My great regret is that it is not published frequently enough and that there is not enough space for me to make notes of amendments. We have to get two copies from the British Standards Institution which we extract from them rather reluctantly and paste on to a large sheet of paper on which we make notes. There is the germ of an idea there, I believe, which might be developed.

I should like to refer, if I may, to the change from "British standard specification" to "British standard." I would suggest that you should have called them "a British standard specification" and then you would be completely logical.

May I crave your indulgence to get the point about drains clear. What is actually meant, I think, is that there are occasions when the British standard puts up the price of drainage. This is due purely and simply to the fact that before the war the local authorities were content with seconds but now they have it in their Bibles that these pipes have to be British standard tested!

MR. WILLIAM G. BOAKS: May I raise a small point about which I am not clear. You encourage the use of British standards by your specifications. How can you encourage the use of codes of practice and get builders' craftsmen to abide by them? I am not sure whether this is within your province.

MR. F. KERR - LUCAROTTI, A.R.I.B.A.: I should like to ask whether there is any likelihood of manufacturers stating on their labels what are the chemical constituents of paint. One is left to specify that all the material shall be obtained from one manufacturer. But supposing you want a particular colour which is made by one manufacturer? I am chary of putting one finish on somebody else's undercoat. In many cases it destroys the results. Chemists do it, so why should not manufacturers? I suppose they are jealous of their trade secrets.

MR. CUTBUSH: I am sure we as the British Standards Institution would love to put the composition of paint on the tin. We have been battling with the paint industry for many times as many years as I have been in the Institution and we are not achieving vast results. If the architects would be more insistent on the need for the disclosure by the paint manufacturer of what he puts in his paint, the latter might be more willing to co-operate with the Institution and the Institution would be better able to help the user.

MR. J. A. SPON, A.R.I.B.A.: I should like to ask Mr. Weston whether there is any possibility of the British Standards Institution producing the British standard codes of practice in a companion volume to the handbook, because it is most valuable. It contains a vast amount of information that cannot be obtained anywhere else and I hope it will be available in a compact form in due course.

There has been excessive emphasis on the question of economies—on the value of the British standards in producing economies. It is to be hoped that we are not to remain under a cloud of economies for the rest of our lives. We are not draughtsmen, we are architects. I hope that we are going to be able to give something without having to think that the total cost of the job is the be all and end all of everything.

MR. WESTON: There is a proposal that we should try to group certain of these codes of practice, and it is hoped that they will be available in the form of a volume before long.

The subdivision of the information sheet had also been considered. Thirty thousand copies go out and we have tried to break it down into sections of interest to particular sections of industry and to make it available in a more condensed form. So far we have not seen our way through this problem. There are already sixty sections of industry, and if we had to print sixty separate monthly information sheets the cost would be very heavy indeed. We continually consider the point and we are well aware of the necessity of keeping it before us.

MR. VIVIAN LEVETT (Student): We have discussed the handbook this evening and the way in which we use standards, and it seems to be indicated that the position is not very satisfactory. The situation is that very often the handbook and copies of the standards are not available, and people rely on manufacturers' catalogues. If we want information about any particular product, we tend to go first of all to the makers' catalogues. I have been in the offices of several private practices since the war, and that is the general situation. I am now with a local authority where I can refer to British standards by walking along the corridor, and I do it. The problem of revising the handbook is of importance to those of us who believe in the idea of standardization.

With regard to standardized control of appearance, we have to accept some mass production, and if the manufacturers could get together and agree upon British standards of size and shape, there would still be a fair amount of scope for individual design. The question whether it is good to accept standardized sizes is somewhat unrealistic.

THE CHAIRMAN: Before the meeting ends Mr. Mills has a few words to say.

MR. MILLS: I hope that this meeting will have opened the way to a greater understanding of the work of the British Standards Institution, and I hope that architects will take advantage of it and will make use of British standards as far as they can. I also hope that they will assist those of us who serve on committees of the Institution, and if there are members here who are interested, the Institution would be glad to hear from them so that when members are required for committees their names can be considered.

If we are not satisfied as architects with the final results, we must use our influence to see that they come into line with our ideas if we can, because in point of facts architects are amongst the larger users of the things which are covered by British standards.

On the question of codes of practice, I am afraid there is little real hope of getting the operatives on a building site to read these. It is sometimes difficult to get them to read drawings, let alone what might be supplementary information. Perhaps there might be a possibility of simplifying—or we might call it popularizing—codes of practice and issuing simple versions which could be made available for members of the team of operatives on a building job. I have in mind particularly the sort of leaflet which the Ministry of Works publishes, usually for the builder to give away to his men, on the latest methods of doing this, that or the other.

The Education of Architects III

By J. BRANDON-JONES, A.R.I.B.A.

MANY students and many architects in practice must have asked at one time or another whether the staff are really earning their money and what they do when they are not to be found in the drawing office or the lecture hall.

Apart from lecturing, the two most important functions of the staff are the writing of programmes and the criticism of the results submitted, but of the two the writing of the programme is the more important. If each student exercises his own critical faculties on his own design and compares it with the work of his fellow students working to the same set of conditions he can teach himself all that he needs to know—provided that the programmes have been properly written and properly timed. It is the first duty of the master to see that the programme is as nearly perfect as he can make it and no trouble should be spared. The question of timing is very important and often difficult, especially if a new type of programme is to be tried and it may in certain cases be worth while for a member of the staff to work through the whole programme beforehand, even to the making of the required drawings or models. Nothing is worse for morale than the frequent extensions of time that become necessary if too much is asked for and too little time allowed. It is also demoralizing if students are allowed to work very much below capacity and find that they can drift along without ever having to exert their full strength.

A surprisingly large proportion of staff time is, or should be, spent on designing programmes that will give opportunities for students to deduce for themselves the principles of architecture. It may take several days of careful study to collect and sort out the material for a day sketch and many weeks to prepare and discuss and correct the drafts for a programme that will form the basis of a month's work in the studio. I would like to insist at this point upon the necessity of writing full and careful programmes for sketch designs, to my mind the importance of a sketch subject is that it trains the student to make a rapid decision and to put down his suggestions quickly and legibly, but he cannot be expected to take a sensible decision in a short time unless he is provided with a reasonably complete set of facts. In a day sketch there is no time for reference and all the relevant information must be sought out beforehand by the staff and included in the programme; for this reason it is often necessary to write a sketch programme at greater length and in greater detail than a programme for a major subject.

Criticism should be helpful and constructive but it is not nearly so important as many students imagine (except in so far as the mere imagining gives it a psychological importance out of relation to its teaching value). Students are often heard to complain that after they have

spent six weeks on a subject they get less than six minutes of criticism but this type of sum completely neglects the work done by the staff in writing the programme and the time spent in criticism on the board while the work was under way.

The strongest point of the school training is certainly the fact that it allows the student to work on a series of carefully graded exercises with a group of men of his own age but with different backgrounds, different tastes and different talents. By working together and by mutual criticism and discussion they can teach one another as much as we can teach them if we point out examples from which they can learn and provide a setting for their studies.

From time to time disquieting rumours circulate among students, and among members of governing bodies, to the effect that members of the staff spend too much of their time running practices or writing books and that they are enticing fifth-year students away from their theses to work on competition drawings for new cathedrals. Probably most members of staff are, in fact, engaged in some of the activities with which they are credited, if so, so much the better for everybody. The fact that the staff are in practice or doing active historical or scientific research is a guarantee that they have at least one foot on the ground and are in touch with practical building, with contemporary requirements and technical developments; in short, architecture is being taught by architects—one of the chief advantages claimed for the old system of pupilage.

The idea that a teacher should also be a practising architect has been widely adopted but it is not always carried out. In some cases a man intends to start or continue a practice but finds that his duties in the school absorb so much of his time that the practice fades away; in a few cases the terms of appointment are such that practice is impossible. (One would like to see all cases of the latter kind investigated by the R.I.B.A., as it seems probable that in some districts the ban is a result of the jealousy of local architects who feel that the senior staff and head of a school might use their prestige to take work that would otherwise go to men already established in the district.)

> Lewis Carroll, in "Silvie and Bruno Concluded," wrote: "It was Moral Philosophy that our idol lectured on. Well, his pupils couldn't make head or tail of it, but they got it all by heart; and, when examination time came, they wrote it down: and the Examiners said, 'Beautiful! What Depth!'"
>
> "But what good was it to the young men *afterwards?*"
>
> "Why, don't you see? They became teachers in their turn, and *they* said all these things over again; and *their* pupils wrote it all down, and the Examiners accepted it; and nobody had the ghost of an idea what it all meant!"
>
> "And how did it all end?"
>
> "It ended this way. We woke up one fine day, and found there was no one in the place that knew *anything* about Moral Philosophy. So we abolished it, teachers, classes, examiners, and all. And if anyone wanted to learn anything about it, he had to make it out for himself: and after another twenty years or so there were several men that really knew something about it!"

It is only too easy for a conscientious student to learn word for word and to reproduce in an examination, or in debate, either the rules of Vitruvius or the slogans of Lloyd Wright and Le Corbusier, without having the slightest idea of the meaning or application of any of these magical formulæ. The value of an architectural theory may become apparent when an attempt is made to apply it in practice, but so long as it is a mere recitation learned from a book or repeated after a lecture there is no test but faith in the author and that faith seems to depend more upon his subtlety as a propagandist than upon his quality as a thinker. By insisting that all teachers also engage in some form of practical work we can ensure that they at any rate are constantly checking their theories in the light of experience, a valuable safeguard against a too simple faith in the printed word.

It will be a disaster to the architectural profession if the schools are ever allowed to slip out of the control of Architects interested in education and into the hands of Teachers interested in architecture! If that happens, anyone who wants to learn about architecture will have to make it out for himself, and it will take him twenty years or so, even if he is not distracted and delayed by the obscurities of critics and theorists. An architect cannot be made by teaching alone, but a bad teacher can do a deal of damage and may muddle his pupils so completely that he sets them back for years even if he does not ruin them altogether.

It has been suggested that if practising architects are employed as teachers they may be tempted to spend too much time on outside work at the expense of their school duties. Most of us could quote cases where a young man has got himself a teaching job with the obvious intention of using it to keep the wolf from the door until he wins a competition, or by some other means succeeds in establishing himself in practice; these men are not the type who are most valuable in the school for their experience is usually just as limited as that of the prize-men who become teachers.

The men who really would be useful are those who have several years' work behind them, as principals or senior assistants, before they take up teaching. Men of the right type will certainly not be willing to abandon their practices to devote their whole time to teaching, nor is it desirable that they should do so; but they may be willing to give two or three days a week to teaching, especially if they are working as members of a partnership.

A school staffed by practising architects must have a larger percentage of teachers to students than one staffed by full-time teachers if there is to be no loss of individual tuition. On the other hand, a teacher who has the liberty to carry on a real practice should expect a smaller salary. Indeed, it ought to be possible in the larger towns to find practising architects who would be willing to teach on a purely honorary basis, like many senior members of the medical profession.

Many arguments have been put forward in favour of the specialist non-practising teacher; among the most plausible is the suggestion that he will make a study of educational methods and teach scientifically. It is quite true that many present-day teachers have far too little method in their lecturing or criticism, but it is very doubtful if the "academic" type are in any way ahead of the "practical" type on this score. Teaching, like any other art, is to a great extent instinctive; there are some people who can make their pupils listen and others, no less able, who cannot. A trained teacher, like a trained lawyer, would be able to talk fluently on any subject if he were properly briefed. He could no doubt give an interesting and informative course of lectures, but a school of architecture demands much more than this from its staff. Students will not get much inspiration from a master who deals in second-hand ideas, however, well he presents them.

The value of accurate and up-to-date information on matters of technique cannot be denied, but at a pinch a student can obtain almost all the information he needs by reading, and lectures, whether good or bad, are not fundamental. The thing that really counts in a teacher is the ability to rouse and maintain eagerness for building and the stimulation of every student to personal effort and enquiry. For this we need architects with an enthusiasm for their work and a desire to hand on that enthusiasm to another generation who may have the chance to develop and extend their ideas. A man who has the required degree of fervour ought to be willing to spend time thinking out methods of putting over the theories or facts that he wishes to impart. And the head of a school should certainly feel responsible for seeing that his staff give a reasonable amount of attention to teaching methods and to the writing and timing of lectures and the technique of criticism; in particular, help should be given to the members who lack experience of lecturing.

Schools are usually divided for administrative purposes into years, and a senior member of staff is placed in charge of each year, with one or more assistants, according to the number of students. This arrangement is fairly satisfactory with a medium-sized school, but with a large school it may be worth while to consider other methods of allocating the responsibility for tuition, for the year system has several serious disadvantages.

(*To be continued*)

York Courses on the Protection and Repair of Ancient Buildings

The first of these courses, which is to be held from September 8-20, 1952, has already been heavily oversubscribed.

The Committee therefore announce that a second two-week residential course will be held at York, March 23-April 4, 1953. It will be similar in outline to the previous course, and intended primarily for practising architects, surveyors, builders and others whose work calls for specialized knowledge in the field of protection and repair.

As before, the course will be under the direction of Dr. William A. Singleton, M.A., B.Arch., Dip.T.P., A.R.I.B.A., A.M.T.P.I., A.I.Struct.E., of the University of Manchester, and many of the same lecturers as for the 1952 course will be present.

Each of these courses announced for 1953 will provide for a maximum of 20 members. Prospectuses giving full information about the courses, including details of accommodation, outline programme, fees, etc., will be available in October, 1952. Details of further courses to be held in the autumn of 1953 will be announced later. Further enquiries should be made to The Secretary, St. Anthony's Hall, York.

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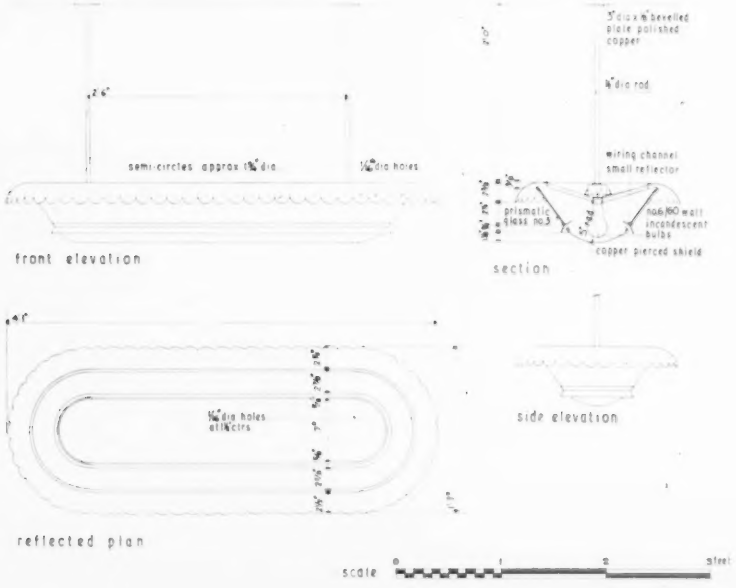
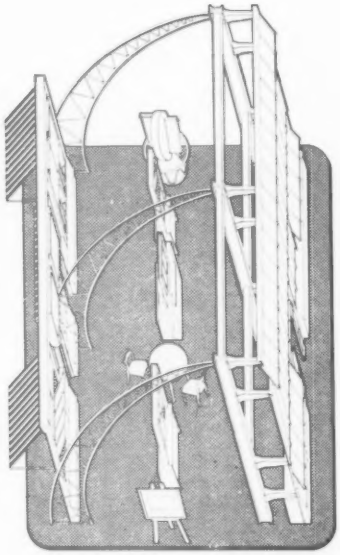
A.R.I.B.A., A.M.T.P.I.

and made by Messrs. C. Hall, Hampstead





HOPE'S

STAND B·415-320

BRITISH INDUSTRIES FAIR

CASTLE BROMWICH, MAY 5*th* - 16*th*

Send for descriptive brochure

HENRY HOPE & SONS LTD

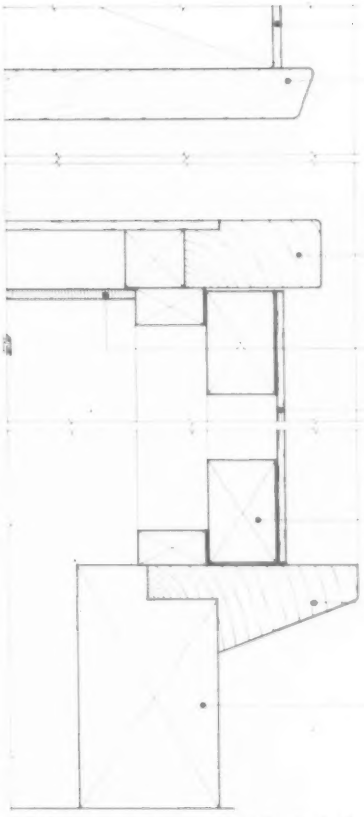
SMETHWICK, BIRMINGHAM & 17 BERNERS ST., LONDON, W.1

You shouldn't miss GLOW-WORM

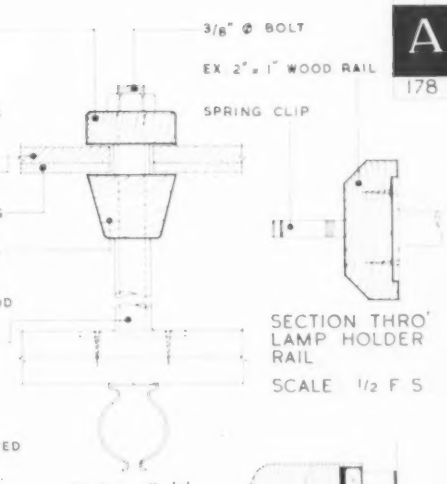
WE shall be very pleased to see you on our stand at the B.I.F. at Birmingham from May 5th to 16th where you will be able to inspect the many heating and cooking appliances (oil-fired and solid fuel) which we shall be exhibiting.

Please make a note to see **STAND B.308**

GLOW-WORM BOILERS LTD
DERWENT FOUNDRY · MILFORD · Near DERBY
London Showrooms 22/24 Buckingham Palace Road, S.W.1

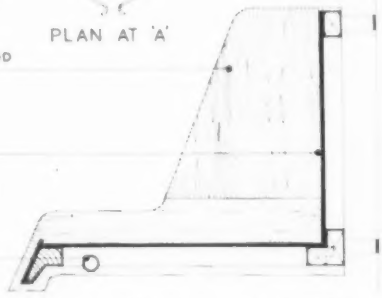

1¼" x ½" BEAD
PLASTIC PANELS
¾" POLISHED CEILING PIECE
¼" PLATE GLASS
FLASHED OPAL GLASS
POLISHED HARDWOOD MULLION
1" POLISHED HARDWOOD
½" TUBE DISTANCE PIECE
ASBESTOS LINING SHEET
REMOVABLE PERFORATED METAL PANELS ON 1½" x 1" FRAME
¾" POLISHED HARDWOOD SIDE PANELS
1" x 1½" STOP
¼" PLYWOOD
EX. 3" x 1½" POLISHED HARDWOOD BEAD ALL ROUND
1'0" STRIP LIGHT
EX. 3½" x 2" WITH EXPOSED SURFACE POLISHED

SECTION C-C SCALE ½ F S

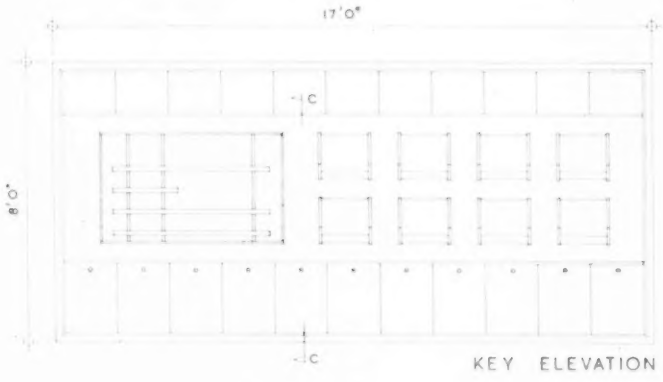


SECTION THRO' LAMP HOLDER RAIL
SCALE ½ F S

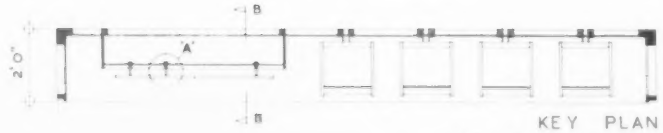
PLAN AT 'A'



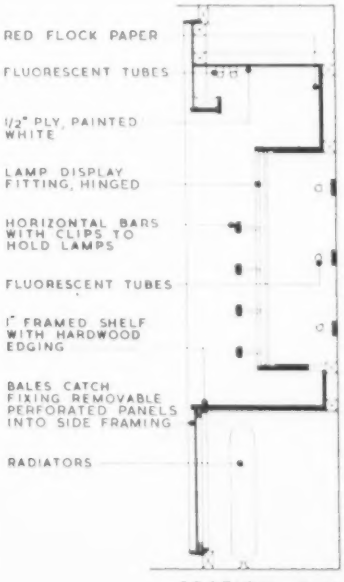
SECTION THROUGH LAMP DISPLAY BOX SCALE ¼ F S



KEY ELEVATION



KEY PLAN
SCALE ¼" = 1' 0"


RED FLOCK PAPER
FLUORESCENT TUBES
½" PLY, PAINTED WHITE
LAMP DISPLAY FITTING, HINGED
HORIZONTAL BARS WITH CLIPS TO HOLD LAMPS
FLUORESCENT TUBES
1" FRAMED SHELF WITH HARDWOOD EDGING
BALES CATCH FIXING REMOVABLE PERFORATED PANELS INTO SIDE FRAMING
RADIATORS

SECTION B-B
SCALE ½" = 1' 0"

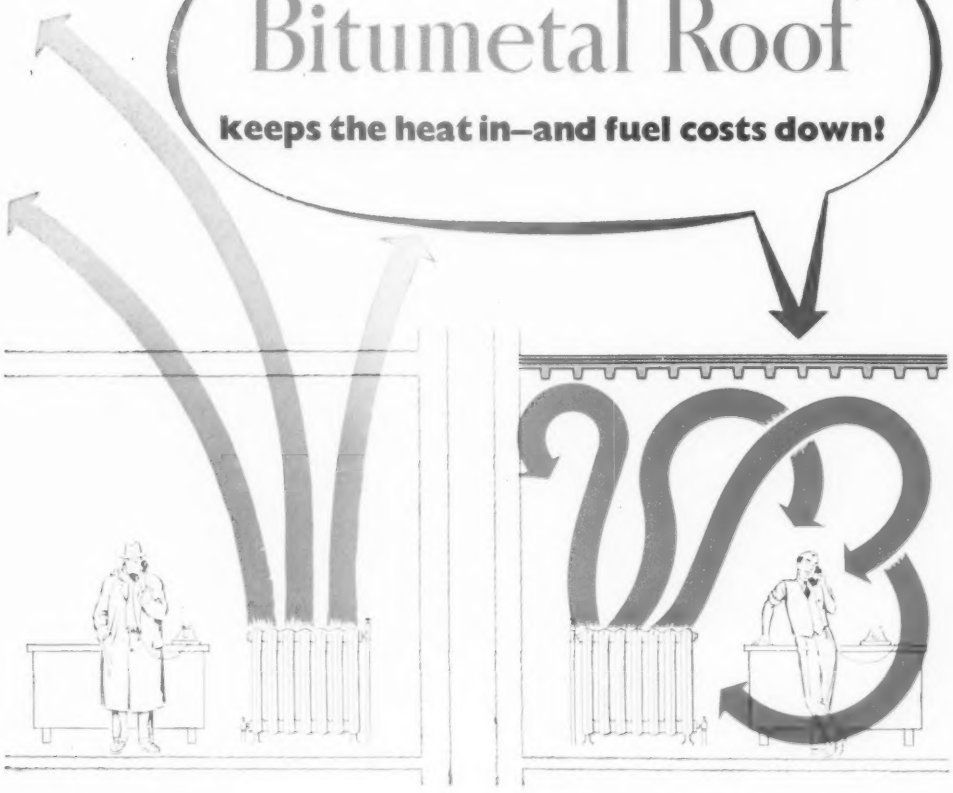
DISPLAY STAND, THORN ELECTRICAL SHOWROOM, SHAFTESBURY AVE., W.C.2

DESIGNERS: KATZ & VAUGHAN

A

Bitumetal Roof

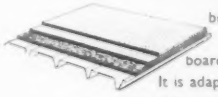
keeps the heat in—and fuel costs down!



Although Bitumetal Roofing is ideally light in weight it has a *high thermal insulation value*. This means—exceptional economy in fuel costs throughout the structure. The heat stays in. The cold stays out. And a comfortable working temperature is economically maintained all the year round.

Full technical data will gladly be supplied on request to any of the undernoted Area Offices

Bitumetal is a composite roof and ceiling



built up from aluminium decking, insulation board, and bitumen roofing. It is adaptable for flat, pitched, curved, or vertical construction.

A few more Points about Bitumetal

★ *Quickly erected—Dry construction.*
★ *Light, strong, and rigid.*
★ *No painting or maintenance.*
★ *Bright reflective aluminium ceiling.*

William Briggs & Sons Ltd

Vauxhall Grove, LONDON, S.W.8 Regd. Office: DUNDEE

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NORWICH Trowse Millgate

County Architect beats Shortages

THE HENGIST SCHEME

for providing additional school accommodation in the West Riding has involved a rush building programme; all materials used had to be readily available. Accotile, specified by Mr. Hubert Bennett, F.R.I.B.A., West Riding County Architect, for flooring the sixty buildings in the scheme, was chosen primarily because it was readily available, and because for special reasons (see below) the cost of installation was remarkably low — but it has proved more successful than old-fashioned alternatives. Picture shows the Hengist annex at Mansel Crescent Infants' School, Parson's Cross, Sheffield.

VERSATILE NEW MATERIAL SOLVES FLOORING PROBLEM

One of the most urgent tasks confronting public authorities in the post-war years has been the provision of new school accommodation. In the West Riding of Yorkshire, population rise has so far outstripped the regular building programme that an emergency scheme has been put into operation for enlarging the present schools. Sixty annexes of standard design (see illustration) are being built in the grounds of existing schools, mostly comprising two classrooms, cloakroom and sanitary accommodation, in order to meet the emergency.

Owing to the urgency of the work, only readily available materials could be specified. At the same time, the budget would not permit luxuries.

Choosing a floor

One problem of great importance has been flooring. A floor had to be found that was at once durable, readily available, and not too expensive.

The material chosen by Mr. Hubert Bennett, F.R.I.B.A., the county architect, was "Accotile," the asphalt tile flooring made by the Armstrong Cork Company — firstly, because it is readily obtainable, and secondly, because Accotile, with its damp-resisting qualities, can be laid direct on to screeded concrete without the necessity of a damp-course — hence the installation is much lower in cost than for most floors.

Accotile provides the flooring for the classrooms and vestibules of every building in the Hengist Scheme.

Qualities of Accotile

Accotile is a composition of inert, asbestos fibres and ground rock fillers, fadeless mineral pigment and asphalt or resin-binders. It provides an extremely durable floor (floors laid in this country in 1938 and 1939 are still giving excellent service) that has a strong resistance to alkaline moisture. Accotile remains non-slip under all conditions, which makes it particularly suitable for schools and institutions.

There are almost unlimited possibilities of design for Accotile, and it can be laid to harmonize with existing decorations. Inconvenience is cut down to a minimum, since Accotile can be used as soon as it is laid.

Standard Accotile is cleaned by washing with water, and can be polished when desired. It is resistant to stains and dilute acids. Where conditions make it advisable, a special Grease Resisting Accotile is recommended.

Accotile is available in two sizes of tile (12" x 12" and 9" x 9") ; in two thicknesses (¼" & ⅛" and in 19 different colours. In addition, Accotile Coved Skirting, supplied in 36" lengths, obviates the need for timber ; and, as there are no corners for dust to collect in, it provides a hygienic, as well as decorative, finish to the room.

ACCOTILE*

"The low-cost floor with the luxury look"

*Registered Trade Mark 550503. Armstrong Cork Company Ltd., Registered Users.

FOR FURTHER INFORMATION

about Accotile, architects and builders are invited to write or telephone to

ARMSTRONG CORK COMPANY LIMITED

London Office: Flooring Department, Bush House, Aldwych, W.C.2. *Tel.: Chancery 6251.*

Birmingham Office: Westminster Chambers, 93a Corporation Street. *Tel.: Central 1271.*

Glasgow Office: 5 Oswald Street, C.1. *Tel.: Central 5703.*

Dublin Office: 54 Middle Abbey Street. *Tel.: Dublin 54901.*

In addition to Armstrong's own service, forty-two approved contractors with branches all over the country handle Accotile.

More Flooring

BY far the most important factor concerned with good finishes of most types of flooring is to ensure the correct laying of sub-floors or screeds. Far too little care is often taken on the job for screeds to be really satisfactory as they depend not only on knowing what to do but in adequate supervision to see that it is done. I suggest that now codes on this subject are available architects should include a reference to them in their specifications and give copies to the Clerks of Works to see they get what is wanted. The words "lay a cement and sand screed ¾in thick" which appear in many specifications may prove hopelessly inadequate when carried out and one has very little redress.

Codes 202 and 203 give some information as to the right way to prepare sub-floors and screeds but detailed information is given in CP.204. M.o.W. Advisory Leaflet No. 5, "Laying screeds," summarizes the essential information into a very concise form which is well worth study. It is most important to obtain good adhesion between the screed and the sub-floor which necessitates cleanliness and adequate wetting if the sub-floor has hardened. The B.R.S. has, very rightly, stressed constantly the need of "dry" mixes to avoid cracking as the screed dries out and it recommends a mix of one part of cement to three or four of sand with the minimum of water to make it moist. Omission to use the right grading of sand has caused many screed failures and as an aid it is wise to keep to that given in B.S.1199. The finish of the screed must be designed to suit the ultimate covering material; for most materials it should be a screedboard or float finish, but for the thin materials such as linoleum, cork, rubber or thermoplastic tiles a steel float finish is essential and they must be truly level.

Code 203 relates to three types of sheet floor coverings, namely, linoleum, cork tiles and rubber, all of which are treated briefly but sufficiently to be helpful. Reference is made to measuring the dryness of the floor before laying by means of a special form of hygrometer which requires four hours' exposure to obtain a reading; this sounds excellent as a safeguard but do flooring contractors receive a sufficient price to allow for a man to visit a site for a whole day to take the necessary two readings prior to starting work?—I doubt it. Could not B.R.S. devise a more rapid method of measurement so that the need to take chances as the hygrometer method necessitates could be avoided.

I am sorry the linoleum sub-code does not give some indication as to the grades which should be used for various of the more usual situations to give a reasonable life. The adhesive clause asks the user to satisfy himself that the proposed adhesive is suitable for the particular conditions but gives no guide whatsoever as to what types there are and where they should be used. Perhaps this is a subject for which a B.S. should be prepared so that the code committee has a basis for reference. Equally the code gives no help in regard to the selection of underlays nor does it indicate when they should be used. I would like to quarrel with the statement that linoleum should be laid out flat for several days before it is cut as several days is, in my experience, hopelessly inadequate. The code also suggests that skirtings should be fixed over the edges of the linoleum; while this is ideal as a protection to the edges it does not seem very practicable if the linoleum has to stretch for even several days as it is preferable to lay floor coverings which can become damaged as late as possible.

I am sorry the sub-code on cork-tiling does not tell us when and where to use the various thicknesses available as I have always been in doubt about this point, nor am I clear as to whether an underlay is needed. I note that when a nailable base is available no mention is made of the need to use an adhesive, but I believe adhesives are generally advisable. Incidentally, how do you drive a nail *below* the surface by a hammer without using a punch?

The sub-code on rubber flooring covers the four usual types, namely, sheet, sponge-backed sheet, separate tiles and inlaid tiles in sheet form. The evenness of screeds on which to lay the thinner types of rubber flooring are of the utmost importance to ensure a satisfactory appearance.

Code 204 "*In situ* flooring" covers a number of types of material in common use, one of which, namely, concrete, is frequently carried out by the contractor and not by specialist contractors. The other materials covered are terrazzo, mastic asphalt, pitch mastic, cement rubber-latex and magnesium oxychloride. The last has been one of the most troublesome materials used in building so perhaps a strict following of the code may save us from annoyance and arguments in the future. The general part of this code is devoted to the correct methods of preparing and laying screeds which has, as already stated, been summarized in a separate M.o.W. leaflet. My personal belief is that the greater proportion of *in situ* flooring failures can be traced back to failures of the screeds and that most of these are due to poor workmanship and only a limited number to incorrect proportioning of materials other than the amount of water which is also largely a matter of workmanship.

Part 2 of the code relates to concrete floor finishes, including granolithic. Again success depends on a low water/cement ratio, correct grading of aggregates and above all in the workmanship of the trowelling; I am gratified to see great stress is laid on the last in the code.

Part 3 deals with terrazzo both as an *in situ* flooring and in pre-cast units. My personal preference is always on the side of using pre-cast units in tile form as I have found these to be much more satisfactory and less liable to ultimate cracking. When the *in situ* type is used I am sure the advice given in the code to use a separating layer is well worth any additional cost and trouble. The limit of 12 sq ft recommended in the code for the division panels, although small, is amply justified in practice. I am sorry the code gives no detailed information in regard to the shape and sizes of the dividing-strips nor any clue as to the quality of the materials for dividing-strips to ensure evenness of wear between the floor surface and the strips. I note that the code has given no indication of the proportions of the various grades of aggregate which should be used to make up the total aggregate quantity in relation of the cement quantity.

Parts 4 and 5 deal with mastic asphalt and pitch mastic respectively. The merits of each of these materials is not well stressed in the code, but both materials are extremely useful for a variety of situations. Care must, however, be taken to specify to contractors the precise conditions of use to ensure correct choice of the grade of asphalt or pitch. I am sorry to see mention made of the laying of these materials on a timber base as it is so liable to cause dry-rot and similar troubles. It is, in my experience, essential to use only very reputable specialist contractors for these materials.

Part 6 relates to cement-rubber-latex which is, as far as I know, supplied and laid as specialist products. The code gives only such general information as is necessary to prepare for the specialist floor layer. I would like to have seen more guidance in regard to thicknesses desirable for varying types of traffic as "not less than ¼in" is not very helpful and also guidance in regard to selection of aggregates to avoid cracking when used in large areas.

Part 7, the final section of the code, covers that very troublesome material magnesium oxychloride. It is a material which is very useful and if carefully laid with the right constituents can be perfectly satisfactory. I welcome this code as I think it may contribute greatly towards eliminating the troubles of the past. I am glad to see the special clause, 7.311, drawing attention to the need to take adequate precautions to protect metalwork from corrosion to which it is very prone if in contact with magnesium oxychloride mixtures; at least 1in of cover of really good concrete or screed is essential.

DUTCH UNCLE

SERVICES
HEATING
B3 19

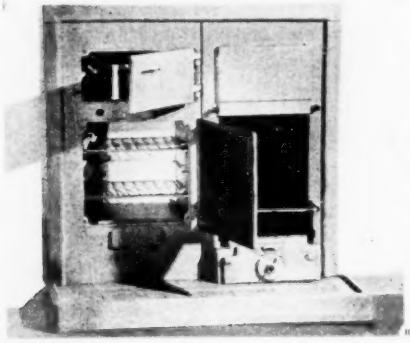
The Cheston inset grate shown here is built for a 16in fireplace opening only and costs £4 12s. Gas ignition burner is optional and costs 3s 8d.

The finish of this new grate is in vitreous enamel in several shades ; the standard colour is " stone mottle."

The overall depth from front to back is 13½in.

The front plate removes completely to give easy access to the ashpan.

The rate of burning is controlled by the knob at the right of the unit.

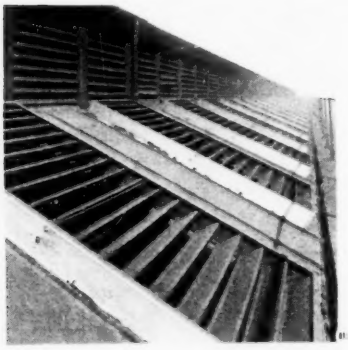


FITTINGS
COOKERS
C4 2

A new model combination grate shown at the B.I.F. Castle Bromwich (stand B501/400). The grate is designed for building into a recess. There is a drop-down fire cover for overnight burning or for use as a hotplate.

The oven door can be right or left handed. The grate can be obtained complete with boiler or prepared for attachment to a boiler.

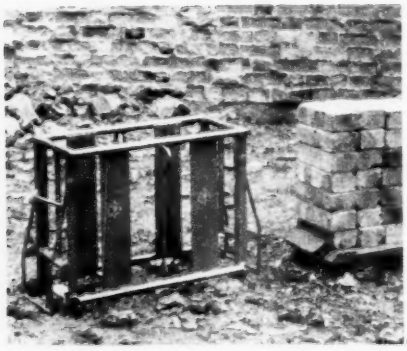
Cooking and water heating facilities are stated to be for from 6-8 people.



SERVICES
VENTILATION
B2 4

The installation of ventilators shown in the picture is in the roof of the Lincoln works of Smith Clayton Forge Ltd.

The firm responsible for the installation of these clear opening ventilators is exhibiting models at the B.I.F. in Castle Bromwich and are providing a special air service to take orders or enquiries from Birmingham to London.



PLANT
HOISTING
E6 5

A new brick hoisting device which will carry 35 bricks at one hoist.

Bricks are stacked on the pallet part of which is in the right of the picture and the retaining cage is dropped over them.

The pivoted arms on the ends of the cage engage with projecting members on the pallet and the whole unit is hoisted by means of the eye-pieces on each side of the cage.

MOSAICS

The names and addresses of manufacturers of any item illustrated in MOSAICS, together with more detailed information relating to their products—including price and availability—will be forwarded to readers on request.
Letters should quote the serial number and be addressed to :

The Editor,
The Architect and Building News,
Dorset House,
Stamford Street, S.E.1.

Please mark the envelope MOSAICS.

INDUSTRIAL NOTES

The Annual Report of the Department of Scientific and Industrial Research (D.S.I.R.) for 1950/51 has just been published by H.M.S.O. price 7/6. By post 7/11.

Appended to the Report of the Advisory Council is a summary of work carried out during the year by the 14 Research Organizations under the Department's own control, and by 41 autonomous Research Associations in receipt of grants from D.S.I.R. This summary brings out the width of the field covered by the Department's Establishments. These range from the study of basic engineering problems, the design of calculating machines, the economy of steel in building, the study of building costs and the effect of mechanization and new methods of construction in house building, to the storage of eggs, fruit and vegetables, the utilization of colonial timbers, fuel economy and the destruction of house flies and clothes moths. By means of models, investigations are being made in the silting of the Thames downstream from the Royal Docks, and the prevention of the flooding of the Eden in Carlisle. Work on coast protection is being begun, and experiments on models should make it possible to forecast how beaches will change in the future. An investigation is being started on the pollution of the Thames estuary.

*

A Convention on glass-reinforced plastics will be held on May 13 and 14 at Ashborne Hill, Leamington. The organizers are Messrs Fibreglass Limited. Sir Hugh Chance, Chairman of Chance Brothers will preside and two papers will be read by Mr. Clare Bacon, Manager of the Plastics Section of the Research Development and Engineering Laboratories of the Owen-Corning Fiberglass Corporation, U.S.A. British experts will also give papers.

(The spelling of the word Fibreglass and Fiberglass are English and American respectively.)

*

The British Wood Preserving Association Annual Convention 1952 is this year being held at Queens' College, Cambridge, June 23-25 inclusive.

*

" Notice to Importers No. 492," just issued by B.O.T., collects together in convenient form the various regulations now in force. Appendix I is a list of goods which can be imported from any country without licence : Appendix II lists goods which can be freely imported from the " liberalization " list of countries, and Appendix IV goods which can be freely imported from the Sterling Area.

Copies of the booklet can be obtained from the Import Licensing Branch of the Board of Trade, Romney House, Tufton Street, S.W.1.

CURRENT MEASURED RATES (LONDON)

These apply to new work of normal character and some size. The rates are for time and materials only, and carry 10 per cent in excess, so the appropriate essential on-costs should be added. The basis cost of material used in the calculation of these prices is taken from the foregoing tables which carried up to the 1st of April, 1952.

[COPYRIGHT]

ESSENTIAL ON-COSTS

Fees payable to L.C.C. for District Surveyor :	
For new buildings of ordinary construction exceeding 5,000 cubic feet, for every 1,000 feet or part of same up to 1,000,000 cubic feet together with an additional sum of	£1/10 - *at* + 1/6
After which allow per 1,000 do.	*at* + 9*d.*
For alterations and additions:	
When £100 the sum of £2/10 -, plus for every £100 or part of same, up to £1,000	£2 10 - *at* + 12/6 per 100
When over £1,000 the sum of £8 2 6, and for every £100 or part of same beyond	£8 2 6 *at* + 3/- per 100
Public buildings : Fees as above but plus	+ 50%
Fees in respect of means of escape in case of fire are 1/5th of the above or £2 if greater or in the case of a one-storey building £1	1/5th
Steel framed or r.c. buildings double	+ 2

Allowance to cover National Insurances, Holidays with Pay and Public Holidays, Welfare, Third Party Risk, Travelling and Guaranteed Week is made in the rates attached to the items.

Allow for Fire Insurance do.	½%
Allow for Water for use on the works and apparatus do.	¼%
Allow for hoarding, or similar licences in City of London say £10	
Do. under Borough Councils per ex month	say 2 6
Allow for Office, Fire, Attendance on C. of W. etc., p. week	say £1

Supervision, etc. assessment Contract value	£4,000	£6,000	£12,000	£24,000	£50,000
Cost of admin.	6%	5%	5%	4½%	4½%
Agent or foreman (each)	5%	4½%	3½%	2½%	1½%
Timekeeper or Watchman (each)	2½%	2½%	1½%	1%	½%

SPOT ITEMS AND DEMOLITION, ETC.

	Per foot run
Hoarding erected and removed	15 -
Planked gangway with handrail, etc. do.	8 -
Proper gantry do.	60 -
Sleeper roadways	12 6
Needling, strutting and shoring including all labours and use and waste in erection and removal	Per foot cube 15 -
Breaking up and removing hard masses of concrete or brickwork, etc., found in foundations	Per yard cube 50 -

ALTERATION-DEMOLITION—	1 Brick	1½ Brick	2 Brick	Per yard Cube
	Per foot super			
Cutting out cement concrete or brickwork in small quantities	1 1	1 10	2 9	50 -
Do. if either in very small quantities or reinforced	1 8	2 9	4 -	73 -
Debris into baskets and removed from inside to outside of bldg.	3½*d.*	5½*d.*	7½*d.*	10 6

SCAFFOLDING

Per Yard superficial	Period— 1 month	3 months	5 months
Putlog type—4' 6" lift	3 6	5 4	7 2
Do. —6' 0" do.	2 9	4 3	5 9
Independent type—4' 6" lift	4 7	7 4	10 7
Do. —6' 0" do.	3 6	5 7	7 8

EXCAVATION

Per Yard Cube. *By hand*	Common Soil	Loam and Clay	Stiff Clay	Hard Gravel
Reduce levels	4 -	4 4	5 1	6 2
Surface trench	7 2	8 10	11 4	12 2
Barrow 25 yds.	2 2	2 10	3 3	2 2
Fill and ram	2 2	2 6	3 3	2 2
Load and cart	12 8	12 11	13 5	12 8
By machine.				
Bulk dig and load	2 9	3 -	3 6	3 6
Lorry standing and 5 miles travel to tip	4 10	5 2	5 10	5 8
1 extra mile to tip	6½*d.*	7½*d.*	8½*d.*	7½*d.*

CONCRETE

1½in Ballast Aggregate	Per yard cube
1 : 3 : 6 Cement concrete in foundations	65 -
Do. around grillages	67 -

REINFORCED CONCRETE

1 : 2 : 4—¾in. concrete, worked around reinforcement, between formwork in the following (at various levels):	
Foundations and surface beds	73 - Per cubic
Walls, 12ins thick or more	82 - Yard

Sectional inches.	Lintols and beams.	Columns and casings.	Braces and projections.
Up to 36	3/10	4 1	4 3 Per cubic ft
36 to 72	3 9	4 -	4 2 do.
72 to 144	3 8	3 10	4 - do.
over 144	3 6	3 9	3 11 do.
Walls 6ins thick			15/6 Per super yard
Do. 9ins thick			24 - do.
Suspended floors average 6ins thick			16 3 do.

REINFORCING RODS (round) bent and placed— Per cwt.	¼in	⅜in	½in	⅝ to 1in
In floors and beams	68/-	63/-	59/-	53/-
In walls	74/-	68/-	62/-	56/-
In columns	80/-	73/-	67/-	60/-

FORMWORK and Supports (4 times use)— Floor soffits	Beams.	Walls.	Columns.
17/- per Yard.	2/2	2/-	2/2 per super foot.

BRICKWORK

BRICKWORK per YARD superficial reduced to ONE BRICK in thickness (scaffold to add)—	In 1 : 3 cement mortar.
Flettons or other similar *at* 105/3 per 1,000	34 3
Mild Stocks or do., *at* 208/- per 1,000	47/-
Second Stocks or do., *at* 233/- per 1,000	49 7
Southwater engineering or similar bricks, *at* 305/- per 1,000	57/6
Blue Staffordshire wire cut *at* 434/6 per 1,000	70/9
Deduct if 1 : 1 : 6 Cement-Lime mortar is used in lieu of 1 : 3 Portland Cement mortar	2*d.*
Add if brickwork commences above ground level	3/-
Do. if in backing to masonry including cutting and waste for bonding	2 6
Do. If circular-on-plan	6 -
Do. If in underpinning	6 -

BRICKWORK IN THICKNESSES NOT REDUCED— Per yard superficial.	Brick, on edge walls.	Half-Brick walls.	1 Brick finished fair both sides.	11" Hollow with 2" cavity and G.I. ties.
In Flettons or similar	14/4	18/3	36/-	39/-
In second stocks or do.	20/-	26/3	52/-	55/-
Add: for pointing as work proceeds, per side	1/3	1/3	1/3	1/3
Thicknessing to old walls, including cutting, toothing and bonding to same an average total thickness of ½ brick	46 -	Fletton 56/-	Stock	Per yard super.
Do. all as last but an average total thickness of 1½ bricks	63 -	80/-		do.

WALLS BUILT IN SUPERIOR BRICKS— In 1 : 3 Cement mortar, fair faced and pointed on both sides as the work proceeds :—	Half-Brick	One Brick	
In first quality Stocks at 243/-	30 4	55/-	Per yard
In red facings at 260/-	30/-	53 4	super.
In bluepressed facings at 455/-	44 6	80 6	do.

GENERAL AND SUNDRY—

Cut tooth and bond new brickwork to old			3/9 per ft
Damp proof course, double slate, horizontal			2/6 super.
Do., as last, but vertical			3/2 do.
Do., bitumen, Hessian base, do.			1/- do.
Frames, bed and point in cement mortar, one side 4*d.* per ft run			
Window board of 6" × 6" × ¾" rounded on edge quarry tiles, bedded, pointed, cut and fitted			2/6 do.
Terra cotta air bricks built in and pointed, including flue	9" × 6" 4/6	9" × 9" 7/6	each.
Chimney pots, plain red, set and flaunched in cement mortar	1ft high 11/9	2ft high 17/6	each
Metal windows, assembled, hoisted and fixed, lugs cut and pinned and frames bedded and pointed one side in cement mortar	Up to 5ft super. 8/10	5ft to 10ft super. 11/3	each
	10ft to 20ft super. 17/6	20ft to 40ft super. 31/-	each
Leaving holes through walls for pipes and afterwards making good	Small pipes 3*d.* per in depth	Large pipes 6*d.* per in depth	
Cutting do., and afterwards do.	9*d.* do.	1 6 do.	
Cut mortices in brickwork or concrete for bolts or dowels and run in with cement grout	1/- per in depth, each		
Holdfasts of stout hoop iron bent holed and screwed to frame and built in	1/- each		

MEASURED RATES.

BRICKWORK—*Continued*

FACING—

Extra only over common brickwork (105/3 per 1,000) for facing with superior bricks in *Flemish bond* and pointing as the work proceeds.

Rustic Flettons (130/3)	3/1½ per yard super.
White (180/–)	6/11 do.
First Stocks (243/–)	11/7 do.
Reds (260/–)	12/11 do.
Blue pressed (481/–)	29/3 do.

If built in English bond, *Add* 10%, to above.
If do. half-brick stretcher bond, *Less* 25%, off above.

COPING—

All labour and material in forming brick-on-edge coping with two courses of roofing tiles under and cement weather fillets on both sides, built in cement and pointed as the work proceeds.

Per foot run	9" thick	14" thick
In picked Flettons	4/-	6/-
In first quality Stocks	4/8	7/-
In red facings	5/2	7/-

Plumbing angles	2*d*. per foot run
Fair cutting	9*d*. do.
Fair raking cutting	1/3 do.
Fair circular cutting	1/3 do.
Fair squint or birdsmouth	1/6 do.

ARCHES

Extra over Fletton brickwork for forming window head with red facing bricks set on end and with 4½ soffits and pointing	foot run 2/6
Do. for rubbed and gauged flat arch in red rubbers set in putty with fine joints	foot super 15/–

PARTITIONS

(over 100 Yards)	Per yard super—2in	2½in	3in
Concrete slab partitions in cement mortar	8/2	9/4	10/6
Hollow terra-cotta, do.	10/4	11/4	12/6
Cutting and bonding at angles, intersections and ends	4*d*. foot run.		

PAVING

	1in	1¼in	1½in	
Grano trowelled gauged 5 : 2	6/9	8/2	9/7	yard super
1 × 5in skirting, square top and cove bottom			2/–	foot run
⅜in × 6in red quarry tile paving			24/–	yard super
⅜in × 6in do. skirting			1/6	foot run
Jointless flooring, ½in thick			20/–	yard super

ASPHALTE (normal conditions and fair quantity)

⅜in pitch mastic floor in one coat on felt underlay on prepared concrete base	B.S. 1450/48 Black	B.S. 1375/47 Brown	Red
Per yard super	10/9	11/10	12/8
	Unit	Mastic B.S.988	Natural Rock B.S.S. 1162/44
⅜in. in two thicknesses on felt underlay on prepared concrete base	yard super	14/–	19/–
Ditto in narrow widths	foot super	1/9	2/4
½in skirting 6in high, angle fillet at bottom splayed and turned in at top	foot run	2/–	2/3
External angles	each	4½*d*.	4½*d*.
Internal *ditto*	each	8*d*.	8*d*.
Tanking or Damp Course		B.S.1097/43	B.S.1418/47
Vertical in two thicknesses	yard super	18/–	23/6
½in horizontal *ditto*	yard super	12/–	18/6
Vertical in three thicknesses	yard super	23/–	31/–
1½in horizontal *ditto*	yard super	17/8	28/–
Labour rounded external angle	per foot run	4*d*.	4*d*.
Ditto internal angle fillet	per foot run	7*d*.	7*d*.
Ditto double *ditto*	per foot run	1/1	1/1
Collars to small pipes	each	2/8	3/2
Ditto to large pipes	each	4/9	5/6

DRAINAGE

Per lineal yard		
Excavate trench, and plank and strut to sides, consolidate bottom to fall, return till and ram earth after drain is laid, and load and remove surplus. In ordinary ground moderately firm.	1 foot in depth	3/10
	2 do.	6/6
	3 do.	16/4
	4 do.	21/8
	5 do.	27/–
	6 do.	34/3
	7 do.	41/9
	8 do.	52/11
	9 do.	61/6
	10 do.	68/–
	11 do.	84/9
	12 do.	95/5

Portland cement (1 : 6) concrete bed under drain pipes and benching up on both sides	Per yard run 4in	6in 18in wide	9in 20in wide	23in wide
	5/6	6/5	8/–	

SALT GLAZED SANITARY DRAIN PIPES

and lay and joint with Yarn and Cement Mortar in trench.

Quality	Quantity	Per foot run 4in	6in	9in
"Best"	2 Tons or more	2/4	3/5	5/8
	over 100 pieces	2/6	3/9	6/2
	under 100 ditto	2/7	3/11	6/5
"Best Tested"	2 Tons or more	2/11	4/3	7/3
	over 100 pieces	3/3	4/11	8/–
	under 100 ditto	3/4	5/–	8/5
"British Standard"	2 Tons or more	2/6	3/9	6/2
	over 100 pieces	2/9	4/–	6/8
	under 100 ditto	2/10	4/2	7/–
"British Standard Tested"	2 Tons or more	3/1	4/7	7/8
	over 100 pieces	3/4	5/–	8/5
	under 100 ditto	3/6	5/3	8/10
Extra for bends "Best"—Contained in 2 Ton lots.		3/8	5/5	15/4
Extra for junction "Best"—(4in on 4in., 6in. on 6in.—9in. on 9in.)	ditto.	5/9	8/5	25/–

IRON DRAIN PIPES—

	Per foot run 4in	6in
Heavy cast iron socketed and laying and jointing in molten lead—		
In main runs	9/–	13/6
In branches	9/5	13/11
	each	
Extra over last for bends and extra joint	30/–	51/–
Do. on do. for junctions and extra joint	41/–	73/–
Cast iron gulley with 10½in inlet and 4in outlet, composed of hooper and trap, and 9in extension piece and 10½in grating, and jointing all together, and jointing to drain and surrounding in concrete	110/–	—
Do. rain water shoe with vertical inlet and inspection cover, and joint up and embed	51/–	100/–

MANHOLE SUNDRIES—		4in	6in
Salt glazed straight half-round main channels	each	4/6	6/3
Do. curved	do.	9/9	14/6
Do. three-quarter section splayed channel bends (Barrons or similar)	do.	11/3	16/6
Heavy manhole steps galvanized	do.	9/6	—
Fix only manhole covers	do.	8/–	—
4in Mica flap, brass faced, f.a.i. valves and fix with molten lead joint	do.	30/–	—

ROOFER

CORRUGATED ASBESTOS SHEETS

P.C. 5/8 per super yard, including side and end laps and fixing to wood	115/– per square
Eaves filler pieces	1/7 foot run
Adjustable ridge	2/11 do.
Barge boards	2/3 do.
Plain roofing tiles, machine made, sand faced, 4in gauge nailed every 4th course with 1¼in galvanized nails, to battens (measured separately)	205/– do.
Extra over last for top edge or abutment cutting	1/0½ do.
Do. for double course at eaves	1/10 do.
Do. for verges, undercloak, bed and point	2/8 do.
Do. Valley tiles including cutting and waste on both sides	9/– do.
Do. Bonnet hips and do. bed and point	10/– do.
Half-round ridge and bed and point	2/6 do.
Fixing soakers	1/3 dozen

Bituminous felt roofing in two layers, laid breaking joint and bedded with hot mastic and finished with fine dry grit	8/6) yard
Do. but in one layer only	6/4) super.

WELSH SLATING—	Per square 12" × 10"	18" × 10"	20" × 10"
3in lap, 2 zinc nails to each slate	261/–	275/–	310/–

Additional labours—	Per foot lineal 12"	18"	20"
At tops, verges and abutments—straight	1/3½	1/4½	1/6½
Do. —raking	1/11½	2/0½	2/4
At hips and valleys (each side)	1/11½	2/0½	2/4
At eaves, double course	2/8	2/9	3/1
Do. to falls	3/7	3/10	4/3

THE SNOWCEM CASE BOOK

THE CROFT, CHURCH FENTON, YORKS.

The external walls of this picturesque old 12-roomed house, built over 700 years ago, were recently decorated with a protective coat of Pink Snowcem.

The Snowcem was applied in two coats on to a cement rendered surface.

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SNOWCEM is available in seven colours: White, Cream, Deep Cream, Pink, Buff, Silver Grey and Duck-Egg Green. Easily applied by brush or spray to concrete, cement rendering, stone or suitable brickwork. Our Technical Department is at your service.

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DECORATES and PROTECTS at low cost

THE CEMENT MARKETING COMPANY LIMITED

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THE SOUTH WALES PORTLAND CEMENT & LIME CO. LTD., Penarth, Glam.

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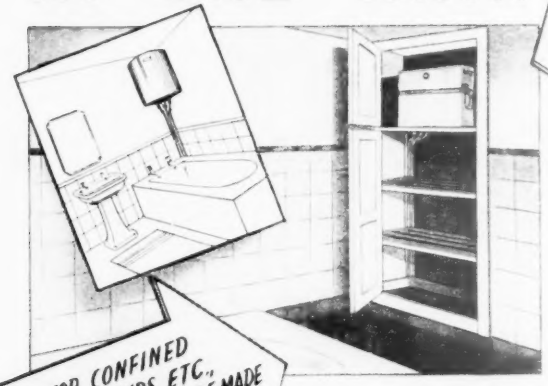

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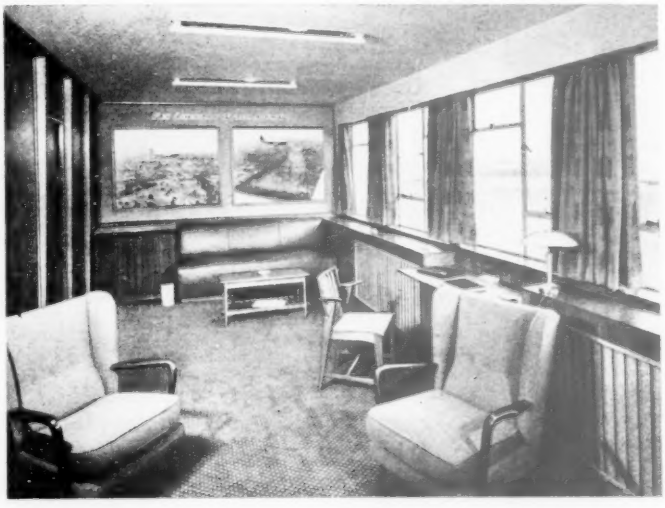

The Clipper Lounge, Pan American World Airways Inc., London Airport, showing the furniture and furnishings recently designed and supplied by Heal's Contracts Ltd. The panelling, cocktail cabinet, and radiator casings are of English walnut. The settee is covered in grey hide. The blue Wilton carpet has white spots, and the curtain fabric, of exclusive design, is lime green with a blue and grey motif.

HEAL'S
CONTRACTS LTD

196 TOTTENHAM COURT ROAD, LONDON, W.1 TELEPHONE: MUSEUM 1666

MEASURED RATES—*Continued*

FLOORS AND FLATS

Hollow tile in situ or precast units hoisted, bedded and fixed—

	Superimposed load in lb per foot super.	Span 12 feet	Span 16 feet
Per yard super.	50	39/6	43/6
	100	40/6	46/–
	150	43/–	49/–

20 lb has been allowed to cover dead load in surface finish
Fair edge to slabs .. .. 6*d.* per foot run
Splay cutting and waste .. .. .. 1/6 do.

CARPENTER AND JOINER

Softwood at min. control cost.

SOFTWOOD CARCASSING— per foot cube—

	Plates	Joists	Rafters	Trusses
Labour, materials, waste nails, hoisting and fixing ..	18/–	18/6	19/6	22/6

FLOORING— Per square—

	¾in	1in	1¼in
Rough boarding	131/–	164/–	204/6
Softwood batten flooring, straight joints, splayed headings	133/–	167/–	208/–
Do. grooved and tongued	154/–	191/–	241/–

SKIRTING— Per foot superficial—

	½in	¾in	1in
Wrot softwood moulded skirting with grounds and backings plugged ..	3/2	3/9	4/3

Mitres to do. .. 3*d.* per sectional inch.
Fitted ends .. 2*d.* do.

SASHES, Fanlights, casements, borrowed lights, etc.—

Per foot super—	Without bars	With bars (2ft sup. in each square)
2in softwood rebated, moulded and fixed	2/9	4/7
Add if fitted with beads	6*d.*	1/6
Add if hanging on butts	2/– each	

WINDOWS, hung on lines—

Softwood cased frames, 1in inner and outer linings, 1¼in pulley stiles, 2in sashes, oak sill.

	Overall size of frames— 6ft	21ft	32ft	44ft
Per foot super.				
Window as described	15/6	8/–	6/4	5/–
Add if sashes in squares, about 2 feet super in each	—	1/3	1/7	1/6
Extra for hanging sashes with lines, weights and axle pulleys	25/– each	42/–	52/–	70/–

FINISHINGS TO OPENINGS— Per foot super—

	¾in	1in	1¼in	1½in
Softwood linings, tongued at angles and tongued to frame including grounds and backings	3/6	4/–	4/8	5/5
Add if crosstongued	6*d.*	6*d.*	6*d.*	6*d.*
Softwood wrot rounded on front edge and with tongue at back window board including groove in sill and bearers	3/5	4/–	4/9	5/6
Add for ends to last notched, returned and rounded	10*d.*	10½*d.*	11*d.*	1/–

Per foot run—	Sectional area in inches— 1	2	3	4	5	6
Softwood wrot and fixed in bearers, backings, grounds, fillets, and similar	3½*d.*	6½*d.*	8½*d.*	11*d.*	1/1½	1/3½
Add if in short lengths ..	2*d.*	2*d.*	2½*d.*	2½*d.*	3*d.*	3*d.*
„ if plugged to brickwork	4*d.*	4*d.*	4*d.*	4*d.*	4*d.*	4*d.*
„ if framed as in legs and bearers ..	3*d.*	3*d.*	4*d.*	4*d.*	6*d.*	6*d.*
„ if rebated or grooved or beaded	½*d.*	½*d.*	½*d.*	½*d.*	½*d.*	½*d.*
„ if chamfered or rounded edges				1½*d.*		
„ if moulded in architraves, capping, etc.				3*d.*		

DOOR FRAMES— Per foot run—

Per sectional inch—	6in	8in	10in	12in	13½in
Softwood, wrot, rebated, rounded framed and fixed	1/9½	2/1½	2/6	2/10½	3/2

DOORS—Per foot super. Number of panels—

	1	2	3	4	5	6
2in Softwood, square framed and flat panels, both sides, on butts	5/–	5/10	6/3	6/8	7/–	7/7
1½in do.	4/5	5/3	5/9	6/1	6/5	6/11
Add for each side moulded	4*d.*	5*d.*	6*d.*	7*d.*	8*d.*	9*d.*
Add for do. flush panelled ..	8*d.*	8*d.*	8*d.*	6*d.*	7*d.*	7*d.*

per foot super—	¾in	1in	1¼in	1½in
In shelves, table tops, wrot and fixed ..	2/2½	2/7	3/1	3/8
Do. in divisions and ends framed ..	2/5½	2/10	3/5	3/11
Add if crosstongued	6*d.*	6*d.*	6*d.*	6*d.*
Add if buttoned	6*d.*	6*d.*	6*d.*	6*d.*

SUNDRIES—Per foot run

	In short lengths	In long lengths	Add for cups & screws
Glazing beads, mitred around and fixed with brads ..	6*d.*	4*d.*	2*d.*
Rounded heel or hollow ..		4*d.*	
Tongued and grooved angle		6*d.*	
Glue blocking		6*d.*	
Mitres	3*d.*	per sectional inch.	
Fitted ends	2*d.*	do.	

STAIRCASE—

	Per ft. super
1¼in Softwood treads with moulded nosings. 1in risers tongued both edges and glued, blocked and bracketed on and including two fir framed carriages	5/3
Do. but in winders	6/4
1¼in. crosstongued landing on framed carriages ..	5/6
2in moulded string	5/3
2in do. ramped	10/6
Ends framed to newel	8/– each
Tongued and mitred angles	4/– do.
Tongued heading joints	4/– do.
Ends of treads and risers housed to string	2/3 do.
Extra for curtail ends to steps, glued up and veneered riser and solid blocking	80/– do.

	1in	1¼in	1½in
Balusters about 2ft 9in long, square and framed each end .. .. .. each	2/8	3/1	3/6
3½in × 3½in square newel, framed	3/3 per foot run		
Mahogany moulded handrail (3in × 2½in) ..	7/– do.		
Do. ramped	12/6 do.		
Do. wreathed	25/– do.		
Ends framed to newels	6/– each		
Joints and handrail screws	8/– each		

FIXING ONLY IRONMONGERY

	To deal	To hardwood
Barrel bolts	1/5	2/– each
Flush bolts	3/3	4/– do.
Sash fasteners	1/10	2/4 do.
Rim locks and furniture	4/6	5/6 do.
Mortice locks and do.	8/9	13/6 do.
Cupboard locks	2/3	2/9 do.
Casement fasteners	1/10	2/4 do.
Do. stays	1/10	2/4 do.
Grip handles	2/2	2/9 do.
Spring catches	1/10	2/4 do.
Cabin hooks	1/5	2/– do.
Floor springs including oil	39/–	48/– do.
Overhead springs	11/–	13/– do.
Springhinges	9/–	10/6 do.

SMITH AND FOUNDER

Basis framed steel joists and hoist and fix .. 66/– per cwt.
Do. but in compound girders .. .. 68/– do.
Do. but in stanchions .. .. .. 75/– do.
Trusses .. .. 90/– do.
Additional cost per cwt. over basic sections for following R.S.J.s.
9in × 7in .. 3½*d.* per cwt. 6in × 3in .. 4½*d.* per cwt.
5in × 3in, 10in × 8in, 12in × 8in, 14in × 8in, 16in × 8in, 18in × 6in, 18in × 7in, 20in × 6½in, 20in × 7½in .. .. .. 6½*d.* do.
5in × 2½in, 22in × 7in .. .. .. 10*d.* do.
4in × 3in, 24in × 7½in .. .. .. 1/1½ do.
3in × 3in .. 1/4½ cwt. 4½in × 1½in .. 2/9 do.
3in × 1½in .. .. 3/10½ do.
Bolts and nuts, fitted .. .. 130/– do.
Forged straps .. .. 100/– do.
Wrot iron balustrade .. .. 115/– do.

RAINWATER GOODS—

	Per foot lineal 2in	3in	4in
Round cast-iron pipe with socketed joints caulked with red lead and tow and fixing with pipe nails and gas barrel distance pieces to plugs in brickwork	3/–	3/7	4/7
Extra for shoes	4/9	6/–	8/6
Do. junctions	7/–	9/–	13/–
Do. bends	5/6	7/–	9/6

RAINWATER GUTTERS Per foot run—

	4in	5in	6in
Half round C.I. gutters jointed in red lead and bolted and fixed on iron brackets	3/–	3/7	4/11
Ogee do. All as last	3/4	4/1	5/2
Extra for stop ends	2/10	3/6	3/9
Do. angles or outlets	5/–	6/4	7/6

MEASURED RATES—*Continued*

PLUMBER

EXTERNAL—	Soakers	Flats	Flashings
4lb Milled Sheet lead	per cwt. 228/–	257/–	265/–

Per foot run		½in	¾in	1in	1¼in	1½in	2in
Lead main	Fixed with tacks	6/7	9/6	13/1	16/11	21/9	30/1
Ditto service		6/–	8/1	10/8	13/7	17/1	23/5
Ditto waste		3/9	5/2	6/7	9/9	11/7	13/7
Bends		—	—	—	1/9	3/–	7/9
Solder joints		7/8	9/6	11/3	13/5	15/11	21/2
Union and joints		12/10	16/5	21/1	28/1	—	—
Stop valve and *ditto*		28/11	37/7	51/10	80/9	—	—
Bib valve and *ditto*		20/8	28/–	—	—	—	—
Ball valve and *ditto*		22/6	31/7	49/5	71/11	—	—
Sleeve and *ditto*		—	—	—	—	21/3	28/9

COPPER TUBES

	½in	¾in	1in	1¼in	1½in	2in
Tubes per foot run	2/4	2/10	3/9	4/6	5/4	7/7
Couplings; straight each	3/1	4/1	6/1	8/1	10/4	14/4
Do. Bends each	6/8	7/11	11/4	15/3	23/3	32/3
Do. Tees	6/11	8/–	12/7	17/–	23/5	33/4
Do. Cistern	4/4	5/10	7/8	9/9	13/7	18/1
Stop cocks	23/10	33/6	52/9	93/–	138/–	213/–

BLACK TUBING (Class C.) fixed with pipe brackets	½in	¾in	1in	1¼in	1½in	2in
Tubes, per foot run	1/7½	1/11½	2/4½	3/–	3/7	4/9
Bends and fix, each	3/6	4/3	5/2	6/8	8/–	11/7
Tees and ditto	3/8	4/5	5/4	6/10	8/4	12/2
Fire bends	1/2	1/4	1/5	1/8	2/3	4/–

Coated iron (M) weight L.C.C. soil and waste fixed with nails and distance pieces and molten lead joints	2in 4/3	4in 6/3 foot run
Extra only for bends and joint	12/7	20/9 each
Do. junctions and joints	14/–	26/– do.
Do. cleaning doors	16/6	18/– do.
Domical wire guards	2/4	2/6 do.

PLASTERER—		Yards super. Wall	Floor	Narrow widths	Sundries feet lineal
Lime and hair	½" Render and set	5/2	—	Increase in cost	Quirk 2d.
Do.	¼" Do. float and set	6/6	—	up to 3" wide	Arris 3d.
Sirapite	⅛" Skimming coat	3/6	—	75%	Fair edge 2d.
Do.	½" Render and set	6/9	—	Do.	Rounded 4d.
			3 to 6"	edge	4d.
			3 to 6"	edge	4d.
Do.	¼" Do. float and set	8/7	—	60%	Flush bead 1/4
Portland	½" Backing coat	4/–	—	Do. 6" to 12"	
Do.	⅛" Plain face	6/9	—	40%	Mouldings per inch 4d.
Do.	½" Screed	4/–	3/3	—	Metres 1ft
Do.	¾" Screed	5/–	4/4		Joining new to old plastering 3d.
Keenes	⅛" Skimming coat	4/6	—		

Plaster board and scrim 5/6 —
Metal lathing ½" × 24 gauge 4/11 —
Dubbing up to ½" thick 1/9 —
¼" × 6" × 6" White or cream glazed wall tiling and setting on prepared screed 35/– yard super.
Rounded edge to do. 3½d. foot run; angles for same 3½d. each.
Cutting and fitting tiles around pipes, clips, etc., 9d. each.

POLISHING

NEW WORK—	Foot super	Sashwork Foot run
Staining, bodying-in and French Polish	2/3	1/6
Staining and wax polishing on hardwood	1/–	8d.
OLD WORK—		
Cleaning down old work and repolish	10d.	—
Stripping, preparing and repolishing	2/6	1/8

INTERNAL PAINTING

With white lead base in common colours, with brushes.

ON WOOD—	Knot stop and prime	Prime and paint once	Prime and paint twice	Add for each extra coat
General surfaces	2/4	4/7	6/4	1/8 Yard super
Running lengths not exceeding 3" wide	3½d.	6½d.	9d.	2½d. Yard run
Do. 3" to 6" wide	5d.	9½d.	1/–	3½d. do.
Do. 6" to 9" wide	7½d.	1/1½	1/7	5d. do.
Do. 9" to 12" wide	10½d.	1/6	2/–	6½d. do.
Sash square each side	4/11	8/5	11/4	2/11 per doz.
Do. in large squares	7/1	12/–	16/2	3/10 do.
Opening edges	7d.	1/2	1/9	7d. each
Casement frames each side	4½d.	8½d.	1/–	3d. Yard run
Mullions or transomes, do.	6½d.	11½d.	1/3	4½d. do.

ON PLASTER—	One coat	Two coats	Three coats	
Paint on surfaces	2/4	4/4	6/–	Per Yard super
Do. on mouldings	2/8	5/2	7/–	do.
Do. on enrichment	4/6	8/6	11/–	do.

ON STEEL—

Paint on structural steel	2/–	3/9	5/3	do.
Do. on roof trusses	3/3	6/4	8/9	do.
Do. on metal windows measured over all on both sides, divided into squares	3/–	5/2	7/3	do.
Do. divided into large squares	2/7	4/5	5/9	do.
Do. divided into extra large squares	2/1	3/8	4/11	do.
Do. on opening edges	9½d.	1/5½	1/11	each
Do. on rain water pipe	7d.	1/3	1/8	Yard run
Do. on do. gutter	1/–	2/1	2/10	do.
Do. on small pipe	2½d.	5½d.	8d.	do.

GLAZING (To New Work)

Polished Plate Glass, ordinary substance (about ⅛in), glazing quality, in the following sizes, glazed complete, in quantities not exceeding 100 feet superficial— Per foot super

In plates not exceeding 2 feet super in each			4/3
Do.	5 feet	do.	4/11
Do.	45 feet	do.	5/6
Do.	100 feet	do.	5/10

Add extra price for glazing with screw beads or clips 3d. per foot super.
Do. if glazing bedded in washleather or velvet 6d. per foot run.

SHEET GLASS glazed, complete, per foot, super, in new work:

	24 oz	26 oz	32oz
Ordinary quality clear glazed to wood, with putty in areas of 100 feet super in the aggregate—per foot super	1/8	1/10	2/0½
Do. 200 feet do.	1/6½	1/8½	1/11
Do. 500 feet do.	1/4½	1/6½	1/9½

Sundry glass and glazing, all as last, in areas 100 feet super in the aggregate.

Figured rolled, white	—1/9½ per foot super
Do. to standard tints	—2/6½ do.
Fluted	2/2 do.
Reeded (Narrow, Broad, etc.)	2/1½ do.
Reedlyte (do.)	2/1½ do.
¼in Rough cast	1/11 do.
¼in Wired Rough cast	2/0½ do.
¼in. Georgian do.	2/1 do.

Add for glazing all as before but to steel to similar work as above, 2d. per foot super.

PAINTER AND DECORATOR

DISTEMPERING—In common colours, put on with brushes—ON PREPARED SURFACE.

per yard super—	1 coat (finish)	2 coats (undercoat and finish)	*Add* if required for Sealing coat	Stippling
Ordinary distemper on flat surface of plaster	7d.	1/1	5d.	2d.
Washable do. on do. of plaster	10d.	1/6	5d.	2d.
Add if in margins, narrow widths or panels	30%	30%	20%	50%
Add if on mouldings	50%	50%	45%	—
Add if on enrichments	160%	160%	115%	—

PAPERHANGING

Hanging only—	Per piece—	Lining	Pattern
On walls		4/–	4/10
On Stairs		5/9	7/2
On ceilings		5/6	6/2

CONTRACT • NEWS •

Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work, (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading, (c) deposit, (d) last date for application, (e) last date and time for submission of tenders. Full details of contracts marked ★ are given in the advertisement section.

OPEN

BUILDING

ASHTON-UNDER-LYNE B.C. (a) 10 shops and 16 flats, Crowhill. (b) Mr. A. T. Kemp, Municipal Offices. (c) 3gns. (e) May 26.

* * *

BRIDLINGTON B.C. (a) (1) 8 houses (2) 58 houses and 14 bungalows or (3) whole 80 dwellings, West Hill Estate. (b) Town Clerk, Town Hall, stating contracts. (c) (1) or (2) 3gns. (3) 6gns.

* * *

CAMELFORD R.C. (a) 4 houses at Mount Camel, Camelford, and 4 houses, Pengelly Road, Delabole. (b) Messrs. Andrew and Randell, Hepworth Chambers, St. Austell. (e) May 28.

* * *

CATERHAM AND WARLINGHAM U.C. (a) 2 pairs of houses and 2 blocks of flats, Site No. 50, Harrow Road, Warlingham. (b) Engineer and Surveyor, Council Offices, Caterham. (c) 2gns. (e) May 20.

* * *

CHELTENHAM B.C. (a) 12 flats in 2 3-storey blocks, Lynworth Estate. (b) Borough Surveyor, Municipal Offices; immediately. (c) 2gns. (e) May 20.

* * *

CHESHUNT U.C. (a) 22 dwellings, Bury Green Estate. (b) Engineer and Surveyor, Council Offices, Manor House. (c) 2gns. (d) May 12. (e) May 31.

* * *

CHESTERFIELD R.C. (a) (Group A) 3 pairs of bungalows (Group B) 7 pairs of houses and 1 block of 4 houses (Group C) 3 pairs of houses and 1 block of 4 houses (Group D) 9 pairs of houses and 2 blocks of 4 houses (Group E) 9 pairs of houses and (Group F) 9 pairs of houses, Blue Bank Estate, Brimington. (b) Council's Engineer, Council House, Saltergate. (c) 2gns. (e) May 21.

* * *

CHESTERFIELD B.C. (a) 48 houses, Newbold Estate. (b) Borough Engineer, Town Hall. (c) 2gns. (e) May 27.

* * *

CITY OF ELY U.C. (a) 10 aged persons' bungalows near the Church, Prickwillow. (b) Council's Architect, Council Offices, Lynn Road. (c) 1gn. (e) May 17.

* * *

CORBY DEVELOPMENT CORPORATION. (a) (1) North Block, 13 shops with 13 2-storey maisonettes above (2) West Block, 6 shops with 6 shops above (3) South Block, ground floor shops with first floor offices above and 2-storey shops with flats on second floor, New Market Square. (b) General Manager, The Stone House; immediately, with details of similar contracts recently carried out.

* * *

CROOK AND WILLINGTON U.C. (a) 37 houses, Witton-le-Wear. (b) Council's Clerk, Council Offices, "Glenholme," Crook. (c) 2gns. (d) May 19.

* * *

CUMBERLAND C.C. (a) Police radio transmitter station and formation of aerial mast foundations at The Beacon, Penrith. (b) County Architect, 15, Portland Square, Carlisle. (e) May 19.

* * *

DARWEN B.C. (a) (Contract No. 1) 100 houses, Birch Hall Estate. (b) Borough Engineer, Town Hall. (c) 3gns. (e) May 21.

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EIRE—DUBLIN CORPORATION. (a) 170 houses at Section 2B, Finglas East housing area. (b) City Treasurer, Exchange Buildings, Lord Edward Street. (c) 5gns. (e) May 28.

* * *

EIRE—ENNIS U.C. (a) 13 houses at No. 1 Clearance Area. (b) Patrick J. Sheahan, 47, O'Connell Street, Limerick. (c) £10. (e) May 23.

* * *

EIRE — SEAMOUNT COLLEGE, KINVARA. (a) Additions at Seamount College. (b) Dermod J. O'Brien, 87, O'Connell Street, Limerick. (c) 10gns. (e) May 21.

* * *

ENFIELD U.C. (a) 6 houses, Goldsdown Road site. (b) Engineer and Surveyor, 7, Little Park Gardens. (c) 2gns. (d) May 13. (e) May 30.

* * *

ENFIELD U.C. (a) 12 3-storey flats, Scotland Green Road site. (b) Engineer and Surveyor, 7, Little Park Gardens. (c) 2gns. (d) May 13. (e) May 30.

* * *

EPSOM AND EWELL B.C. (a) Reinforced brick and concrete Civil Defence control centre at rear of Town Hall, Epsom. (b) Borough Engineer, Town Hall. (c) 2gns. (e) May 21.

* * *

GODALMING B.C. (a) 40 dwellings, Binscombe Farm Estate, Farncombe. (b) Borough Engineer, Branksome, Filmer Grove. (c) 2gns. (e) May 16.

* * *

LEEDS C.C. (a) Contract No. 417, Farm buildings at Shadwell Approved School, Shadwell Lane. (b) City Architect, Priestley House, Quarry Hill. (c) £1. (e) May 23.

* * *

LEIGHTON BUZZARD U.C. (a) 11 houses at Garden Hedge. (b) H. A. Rolls, 15, Bridge Street. (c) 2gns. (e) May 19.

* * *

LICHFIELD C.C. (a) Block of 6 shops with 8 flats and maisonettes above and 9 houses, Weston Road Estate. (b) City Engineer, Guildhall. (c) 2gns. (e) May 24.

* * *

LINCOLN C.C. (a) 100 dwellings, Riseholme Estate. (b) City Architect, Stamp End. (c) 2gns. (e) May 26.

* * *

LONDON—LEWISHAM B.C. (a) War damage and external repair works at Louise House, Dartmouth Road, S.E.23. (b) Borough Architect, Council Offices, Canadian Avenue, S.E.6. (e) May 22.

* * *

LONDON—WALTHAMSTOW B.C. (a) 12 3-storey flats and 2 houses, Northcott House, Palmerston Road, E.17. (b) Borough Architect, Town Hall, E.17. (c) 2gns. (d) May 13. (e) May 28.

* * *

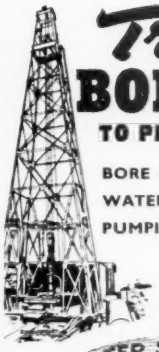
MANCHESTER C.C. (a) 11 shops and maisonettes, Northern Moor South-West Sub-Centre, Wythenshawe. (b) City Architect, Town Hall. (c) 1gn. (e) May 22.

* * *

MONMOUTHSHIRE C.C. (a) 2 farmhouses, 2 sets of farm buildings, alteration of existing farmhouse and buildings, alteration and addition to water and electricity supplies at Llandewi Court Farm, nr. Abergavenny. (b) County Land Agent, Cambria House, Caerleon. (c) 5gns, cheque payable to Council. (e) May 24.

* * *

OLDHAM B.C. (a) 32 aged persons' flatlets, Limeside Estate. (b) Messrs. Cameron and Middleton, 21, Queen Street. (c) 2gns. (e) May 30.



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OLDHAM B.C. (a) 14 old persons' bungalows, Limeside Estate. (b) Messrs. Cameron and Middleton, 21, Queen Street. (c) 2gns. (e) May 26.

* * *

SCOTLAND—EASTERN REGIONAL HOSPITAL BOARD. (a) Radiodiagnostic department at Dundee Royal Infirmary (separate trades). (b) Messrs. Johnston and Baxter, 49, Meadowside, Dundee. (d) May 10.

* * *

SCOTLAND—EAST LOTHIAN C.C. (a) 6 houses at Ormiston and 6 houses at Polwarth Terrace, Prestonpans (separate trades). (b) County Architect, County Buildings, Haddington. (d) May 12.

* * *

SCOTLAND—ZETLAND C.C. (a) Alteration and extension of "Viewforth," Lerwick (separate trades). (b) Mr. David A. Adamson, 48, Melville Street, Edinburgh, 3. (e) May 31.

* * *

WELWYN R.C. (a) 26 houses, Hawbush Common Estate. (b) Council's Surveyor, Council Offices, By-Pass Road. (c) 3gns. (e) May 26.

* * *

WHITTLESEY (ISLE OF ELY) U.C. (a) 6 pairs of houses with site works, Victory Avenue. (b) Messrs. Ruddle and Wilkinson, Long Causeway Chambers, Peterborough. (e) 2gns.

* * *

WIRKSWORTH U.C. (a) 14 houses, 3 lock-up shops and 2 flats, with site works. (b) Mr. J. L. Bakewell, 25, Chapel Street, Belper. (c) 2gns. (e) May 31.

* * *

WITHNELL U.C. (a) 12 houses, Oak Tree site, Brinscall. (b) Council's Clerk, Council Offices, Brinscall, nr. Chorley, Lancs. (c) £2. (e) May 23.

PLACED

*Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. * denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.*

BUILDING

ILFORD B.C. (1) 96 flats. (2) Gaysham Hill site. (3) Hammond and Miles, Ltd., Scrafton Road Works, Ilford, E. (4) £145,540.

* * *

MANCHESTER CORPORATION. (1) Houses. (2) Various estates. (3) 212 houses and 12 aged persons' houses, Simms, Sons and Cooke, Ltd., Nottingham. 119 houses, F. Gannon and Sons, Ltd., Manchester. 124 houses, T. Costello, Ltd., Heaton Moor. 216 houses, Marsden and Chapman, Ltd., Timperley. 62 houses, Poole and Foster, Ltd., Manchester.

* * *

BIRKENHEAD B.C. (1) 99 houses. (2) Woodchurch Estate. (3) Lloyd and Cross, Ltd., Birkenhead. (4) £163,716. (1) 100 houses. (2) Woodchurch Estate. (3) Wm. Thornton and Sons, Ltd., Wellington Road, Liverpool. (4) £164,592.

* * *

LONDON, W. (1) Extensions to studios. (2) Lime Grove, Shepherd's Bush. (3) Robert Hart and Sons, Ltd., 121, Victoria Street, London, S.W.1. (4) £135,000. The B.B.C. are the promoters.

* * *

HAMMERSMITH B.C. (1) Blocks of flats. (2) Kelmscott Gardens. (3) Direct labour. (4) £61,714.

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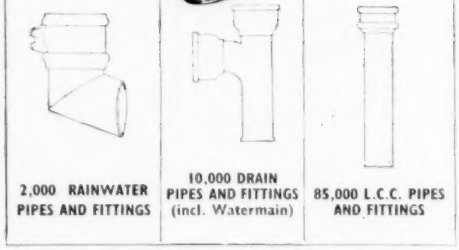

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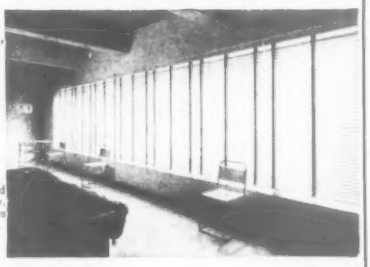

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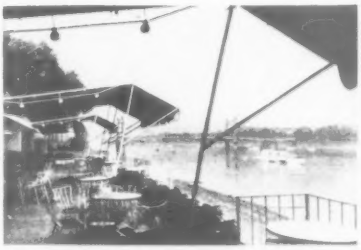

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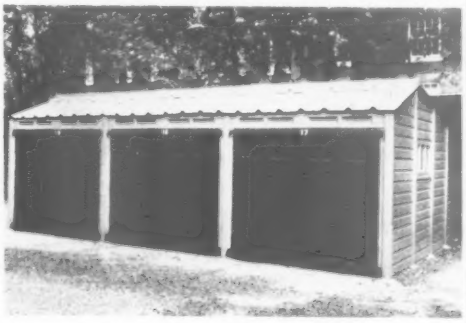

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APPOINTMENTS

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order 1952.

BOROUGH OF MAIDENHEAD.

BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.

CHIEF ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the appointment of CHIEF ARCHITECTURAL ASSISTANT on Grade A.P.T. VII of the National Scales (£685-£760).

Candidates must be Associates of the Royal Institute of British Architects.

Housing accommodation may be available.

The appointment will be subject to:—

(a) the National Scheme of Conditions of Service;

(b) the Local Government Superannuation Act, 1937;

(c) the satisfactory passing of a medical examination;

(d) termination by one month's notice on either side.

Applications stating age, qualifications and experience, accompanied by copies of two recent testimonials, must be sent in envelopes endorsed "Chief Architectural Assistant" to the Borough Engineer and Surveyor, 14, Craufurd Rise, Maidenhead, not later than Thursday, 22nd May, 1952.

Canvassing will be a disqualification and candidates must disclose whether to their knowledge they are related to any member or senior officer of the Council.

STANLEY PLATT,
Town Clerk.

Guildhall,
Maidenhead.
April, 1952. [6345

LANCASHIRE COUNTY COUNCIL.

PLANNING DEPARTMENT.

PLANNING ASSISTANT A.P.T. Grades I–V (£440-£620) required at Liverpool. Salary according to qualifications and experience. Candidates for Grade V should be qualified by professional examination as Architects, Surveyors, Engineers or Town Planners, and for Grades I–IV possess a University Degree or the Intermediate Certificate of an appropriate professional body.

Applications, giving present salary and two referees (preferably one should be present employer) to County Planning Officer, East Cliff County Offices, Preston, by 21st May, 1952. [6355

COUNTY BOROUGH OF GREAT YARMOUTH EDUCATION COMMITTEE.

APPOINTMENT OF CLERK OF WORKS.

APPLICATIONS are invited for the appointment of a CLERK OF WORKS to supervise the erection of the new Peterhouse Junior School.

The Appointment will be temporary, for approximately two years, and subject to one month's notice on either side.

The salary will be £12 per week.

Applicants must have a thorough knowledge of the building trade, including experience in connection with steel framed buildings. They must be conversant with plans, specifications, bills of quantities and competent to set out work, give levels and keep all necessary records and progress reports.

Applications, stating age, qualifications, present employment and previous experience, accompanied by copies of three testimonials, should be enclosed in an envelope endorsed "Clerk of Works, Schools" and must be received by me not later than May 30, 1952.

Canvassing directly or indirectly will be deemed a disqualification, and candidates must disclose in writing whether, to their knowledge, they are related to any member, or holder of any senior office, under the Council. Candidates who fail to do so will be disqualified and, if appointed, will be liable to dismissal without notice.

D. G. FARROW,
Chief Education Officer.

22, Euston Road,
Great Yarmouth,
May 1, 1952. [6367

APPOINTMENTS—contd.

CITY OF PORT ELIZABETH.

VACANCY.

TEMPORARY SENIOR ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited from suitably qualified and experienced persons for the post of TEMPORARY SENIOR ARCHITECTURAL ASSISTANT in the Architectural Section of the City and Water Engineer's Department at a fixed salary at the rate of £800 per annum, such appointments to be for a period of three years. At present the cost of living allowance is on the following basis and payable to married and single persons respectively, viz.:

Married Persons.	Single Persons
£190 per annum	£136 per annum

Preference will be given to Associates of the Royal Institute of British Architects.

Applicants must have had a thorough training in Architectural design and the construction of major projects.

Applications containing full details concerning age, qualifications and experience and enclosing copies of not more than three recent testimonials will be received by Messrs. Davis & Soper, Ltd., 52 & 54, St. Mary Axe, London, E.C.3, not later than Saturday, the 31st May, 1952.

G. H. BREWER,
ACTING TOWN CLERK.

28th April, 1952. [6357

DORKING URBAN DISTRICT COUNCIL.

APPOINTMENT OF DRAUGHTSMAN AND GENERAL ASSISTANT (GRADE II).

APPLICATIONS are invited for the above appointment in the Council's Surveyor's Department.

Candidates must be neat, expeditious draughtsmen, and preference will be given to applicants who have had architectural training.

The National Conditions of Service will apply to the appointment, and also the provisions of the Local Government Superannuation Act, 1937. The selected applicant will be required to pass a medical examination. The appointment will be terminable by one month's notice in writing on either side.

Form of application may be obtained from the undersigned and must be returned, suitably endorsed, with the names of three referees, not later than Friday, 23rd May, 1952.

Canvassing in any form will be a disqualification, and candidates must disclose in writing whether to their knowledge they are related to any member or to any senior officer of the Council.

F. G. SUTHERLAND,
Clerk of the Council.

Pippbrook,
DORKING, Surrey.
29th April, 1952. [6362

COUNTY BOROUGH OF GRIMSBY.

APPOINTMENT OF ARCHITECTURAL ASSISTANTS.

APPLICATIONS are invited for the following appointments in the Architectural Section of the Borough Engineer & Surveyor's Department:—

(a) ARCHITECTURAL ASSISTANT, Grade A.P.T. VII Salary £685-25-£760 per annum.

(b) ARCHITECTURAL ASSISTANT, Grade A.P.T. II Salary £470-15-£515 per annum.

Housing accommodation will be provided for the successful applicant, if married, in connection with appointment (a).

The appointments are terminable by one month's notice on either side and also subject to the provisions of the Local Government Superannuation Act, 1937. The successful candidates will be required to pass a medical examination.

Applications stating age, whether married or single, qualifications, and details of training and experience, together with copies of two recent testimonials, to be delivered to the undersigned not later than Saturday, the 24th May, 1952.

J. V. OLDFIELD,
Borough Engineer & Surveyor.

Municipal Offices,
Town Hall Square,
GRIMSBY.
May, 1952. [6370

APPOINTMENTS—contd.

ROYAL WEST OF ENGLAND ACADEMY.

SCHOOL OF ARCHITECTURE, BRISTOL.

OWING to the retirement of the present Principal, applications are invited for the POST OF PRINCIPAL, who will also be a Year Master, at a salary of £1,200 p.a., rising by annual increments of £50 to £1,400 p.a., the appointment to take effect from September 1, 1952.

Applications should be made in writing, stating particulars of previous experience and the names of two referees, by June 14, 1952, to the Honorary Secretary, Eustace H. Button, 23, Berkeley Square, Bristol, 8. [6366

LONDON ELECTRICITY BOARD.

SUB-AREA BUILDING SUPERINTENDENT.

APPLICATIONS are invited from persons suitably qualified for the above position in the North Eastern Sub-Area Construction Branch at Stratford, E.15.

Applicants must have had an approved training in the Building Industry, and by subsequent experience be capable of preparing estimates and specifications, planning building construction work and supervising building work carried out by direct labour or under contract. The successful candidate will be responsible to the Sub-Area Construction Engineer for the supervision of general building work in connection with substations in particular; also for general maintenance works in connection with all classes of building within the Sub-Area.

The post is graded under Schedule "A" of the National Joint Board agreement as Class K, Grade 7—£886 4s per annum, rising to £925 1s per annum, inclusive of London Allowance.

Application forms from Establishments Officer, 46, New Broad St., E.C.2, to be returned completed by 17th May, 1952. Please enclose addressed foolscap envelope and quote ref. V/1453/AA on all correspondence. [6365

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ARCHITECTURAL APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order 1952.

AN Industrial architect is required by a large manufacturing company in the Midlands, to take responsibility for the development and supervision of building work. Applicants, who should be registered architects by examination, must have had experience in modern heavy industrial building design.—Applications stating age, experience, qualifications and salary required, to Box No. 985, T & G 101, St. Martin's Lane, London, W.C.2. [6344

QUALIFIED Architectural Assistant required by a substantial brewery company controlling licensed houses, etc., in Northumberland, Durham and North Yorkshire. Applicants should be Associates of the R.I.B.A. or hold other recognised professional qualifications in architecture and should have had considerable experience in preparing working drawings and specifications of new buildings and alterations, also maintenance repairs. A non-contributory Pension Scheme is in operation and the commencing salary would be in the region of £750 per annum, subject to variation according to experience and qualifications. Applications, stating age, qualifications, previous appointments (with dates) should be made in writing to Box 8904. [6368

SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order 1952.

SANITARY engineer required by London architects with varied practice, for design of plumbing and drainage schemes to multi-storey flats, housing, office buildings, aerodromes. Some knowledge of heating desirable. Salary by arrangement. Write Box 8905. [6369

REPRESENTATIVES required calling on builders and civil eng. contrs. by company specialising in supplies of site canteen equipment and utensils, hostel furniture and bedding.—Horwood Catering Equipment, 177, Seven Sisters Rd., London, N.4. Archway 5226-7. [6349

LONDON & Home Counties.—Part-time representative for well-established engineering speciality selling on quality, not price; applicant must have good connection best architects and must be competent to take working details from drawings and/or site and to discuss technical details with clients.—Box 8858. [6359

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DISMANTLING & ENGINEERING (MIDLANDS), LTD., Dept. "O," Narrow Lane, Blackheath. Tel. Bla. 1821. [6347

FOR sale: Quantity 8ft × 4ft sheets expanded aluminium, 4in × 1½in gauge; also ⅛in high tensile steel rods and assorted R.S.J.s and compound girders.—Craven (Builders), Ltd., 313, Saffron Lane, Leicester. [6348

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MESSRS. CONEX-TERNA, Ltd., beg to intimate to all users that their Sofcrop joint for copper pipes is no longer in production and that their joint which is the subject matter of claims one and three of British Provisional Patent Specification No. 30690 is also no longer in production to satisfy objections of Messrs. James H. Lamont & Co., Ltd., the proprietors of British Patent No. 395536. [6354

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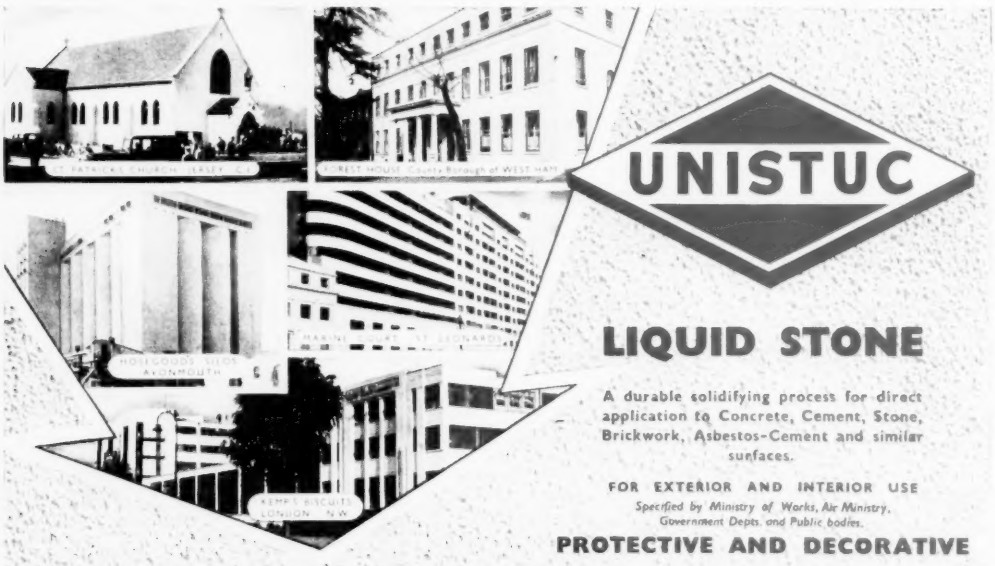

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